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American Forestry

JULY 1911

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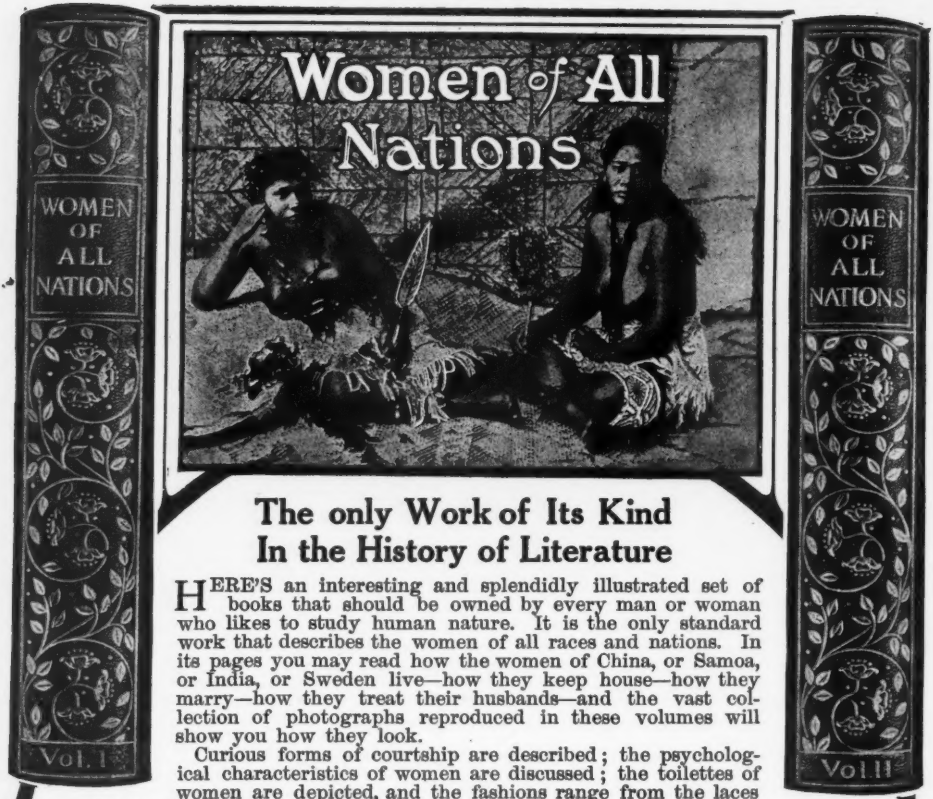

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LOOKING UP THE VALLEY OF CANE CREEK FROM BAKERSVILLE, NORTH CAROLINA, SHOWING ERODED ALLUVIAL LANDS. THE CREEK FORMERLY RAN AT THE BASE OF THE HILL ON THE RIGHT. ITS COURSE IS NOW DISTRIBUTED IN SMALL CHANNELS, EXTENDING OVER A BREADTH OF MORE THAN 100 YARDS. SEVERAL HOUSES ARE WASHED AWAY, AND THE THREE HOUSES IN SIGHT WERE UNDERMINED AND TURNED ON THEIR FOUNDATIONS BY THE FRESHET OF MAY, 1901.

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THE APPALACHIAN FORESTS

ON JUNE 19th, the National Forest Reservation Commission met at the request of the Forest Service to consider the tracts which the Forest Service had examined and passed on with approval. There were present at the meeting Secretary of Agriculture Wilson, Secretary of the Interior Fisher, Secretary of War Stimson, Senator Smith of Maryland (Senator Gallinger was the only member of the Commission not present), Representative Hawley of Oregon, Representative Gordon Lee of Georgia, Director Smith of the Geological Survey, Mr. Graves, the Forester, and Mr. William L. Hall. The Commission took no action, for the members felt that with the two tracts which both the Survey and the Forest Service had examined, certain legal questions must be settled once for all, and in the words of the Commission, that "we must start right."

The Forest Service had made surveys and had all necessary data on nine or ten tracts, three of which were in the White Mountains, and the rest in the Southern Appalachians. These tracts involved 140,000 acres. But the Geological Survey had examined and approved only two tracts, Tract A in Georgia, of some thirty thousand acres, and Tract B in Tennessee, of some sixty thousand acres. These two tracts involve legal questions as to title and conditions, for most of the titles in mountain regions of the South are what are known as "shot-gun" titles, and there is much uncertainty and a great deal of difficulty where the settler has taken possession and has tried to farm on non-agricultural forest lands with obscure titles.

On the other eight tracts more easily accessible and with no legal questions involved, which the Forest Service had approved, the Geological Survey was not ready with its report. Director Smith does not seem able to coöperate with the Forest Service in the way prescribed by law. His attitude is in marked contrast to that of the Commission, which met on the first day appointed by the Service, and gave to the consideration of its plans the most cordial and enthusiastic attention. The Commission will carry out the wishes of the people, as expressed in the law of March 4, 1911. But it may as well be recognized now as later that the ambiguity in the law's expression as to the amount of coöperation of the Geological Survey is going to be used by the men who are consistently and continuously opposed to the public-spirited labors of the Forest Service.

In the consideration of lands recommended for purchase by the Forest Service and approved by the Geological Survey, the National Forest Reservation Commission encountered certain points which seem to require further consideration.

In the case of one tract, Tract A, the mineral rights had been reserved not by the present owners, but by former owners, and apparently the reservations were made and appear to be entirely without restrictions as to how the mining is to be carried on or the minerals removed. In such a case it would be apparently impossible to adequately protect the forest. Should the government purchase the land the Weeks law specifically provides that in every case the rules and regulations under which the mining and removal of such minerals shall be done shall be expressed in the instrument of conveyance and thereafter the mining and removal of the minerals so reserved shall be done only under and in obedience to the rules and regulations so expressed. Of course, it is impossible to apply the provisions of the law regarding these restrictions where the reservations were made years ago and are simply carried over in the present deeds. It seemed to the Commission that the effect of such reservation should be reported upon by the Attorney General before any action should be taken.

In another case Tract B, where it was proposed to purchase the land, with the timber standing thereon reserved to the owner under a contract to run 20 years or more, the question arose as to the specific agreement to be entered into with the company for the cutting of this timber and for the protection of the land and young growth against fire.

All these matters called for further investigation and for negotiations. Until this can be done the Commission may not think it best to take any action. This should not, however, take very long.

Representatives Hawley and Gordon Lee, accompanied by Mr. William W. Ashe, of the Forest Service, after the meeting on June 19th, made a trip to Georgia especially to investigate the deeds and titles involved in that tract. They will make their report to the Commission after this magazine goes to press, for the Commission is to meet again on Monday, the 26th of June, to see if any action to use any portion of the two million dollars' appropriation to purchase any lands approved both by the Forest Service and the Geological Survey can be taken before the end of the fiscal year.

When it became evident because of the delay of Director Smith that only a very small part of this two million dollars could be used before the end of this fiscal year, three resolutions were introduced into Congress—one by Representative Austin of Tennessee, one by Representative Weeks of Massachusetts, and one by Senator Gallinger of New Hampshire—providing that the unused portion of the appropriation remaining in the Treasury of the United States should be placed to the credit of the National Forest Reservation Commission for use within the ten years of its official existence. This session of Congress is, of course, not concerned with appropriation bills and the Democratic caucus has ordered that no bills involving appropriations should be reported out of committee this session. The fate of these three bills is evident. Whether or not the next Congress will take the desired action remains to be seen.

Within the short time between the passage of the Weeks bill in February and the end of the fiscal year in June, every effort has been made by the Forest Service to proceed with the acquisition of lands. A very efficient organization was ready for action as soon as the bill became law and has done its part. All the men possible were put into the field to make surveys and examinations. They worked night and day with their characteristic zeal to carry out the letter and spirit of the law. The same cannot be said of the Geological Survey, which has apparently regarded itself as clothed by the law with power without obligation.

Summed up, the situation is as follows: It is very doubtful if the Georgia tract and the Tennessee tract together comprising 90,000 acres and approved

both by the Forest Service and the Geological Survey, can be purchased before the end of the fiscal year, although two members of the Commission are personally examining them and the Commission voted to meet the 26th day of June before the close of the fiscal year.

Were it possible to buy the two tracts named above, only a very small portion of the two million dollars could be used. The remainder of that appropriation, so far as this Congress is concerned, is lost to the Commission. The next Congress may vote to make the unused portion in the Treasury payable to the Commission at some future time.

The purpose of the Weeks bill, which became a law March 4, 1911, has been frustrated. The Director of the Geological Survey may find himself in the disagreeable position of having to answer to the people of the country for what he has failed to do and what he has prevented others from doing.

COOPERATION WITH STATES IN FIRE PATROL

By J. G. PETERS,

Chief of State Cooperation, United States Forest Service.

THE first tangible results of the Weeks law came on June second, when the Secretary of Agriculture and the president of the New Hampshire Forestry Commission placed their signatures to a coöperative agreement for protecting the forests of the state from fire. The Secretary's representative in putting this agreement into effect is the Forest Service.

The section of the Weeks law, which authorizes such coöperation, carries an appropriation of $200,000 to enable the Secretary of Agriculture to coöperate with the states in protecting from fire the forested watersheds of navigable streams. The Secretary is authorized to coöperate in the organization and maintenance of a system of fire protection on private or state forest lands situated upon such watersheds. The states in order to receive federal assistance of this sort must have provided by law for a system of forest fire protection, and must have appropriated funds for the system. The federal government can not expend in any state an amount to exceed that expended by the state.

New Hampshire, among other states, requested coöperation under this section of the Weeks law. The state had fulfilled all the requirements of the law. It had a system of forest fire protection; it had made an appropriation for such protection; and it proposed to expend an amount equal at least to that requested of the federal government for protection on the forested watersheds of its navigable streams. The state requested a federal allotment of $7,700. It was approved for $7,200. This amount will provide the services of 24 forest patrolmen at $2 a day from June 1 to October 31. The state, on its part, will expend at least this much, perhaps twice as much, in the salaries of patrolmen, the construction and maintenance of lookout stations and telephone lines, the fighting of forest fires and the like. Although the expenditures of the state, which are to offset those of the federal government, may properly be for various purposes of protection, the expenditures of the federal government are to be exclusively for the employment of patrolmen, including men assigned to lookout duty, railroad patrol, and so on. This is advisable in order to simplify the fiscal operation of the coöperative agreement

and also the inspection of the use of government funds and the results accomplished thereby, which it may be desirable for the Forest Service to make from time to time. A distinction has also been made between state patrolmen and federal patrolmen, which will facilitate keeping separate the work charged to the state and that charged to the federal government.

The State Forester of New Hampshire, acting as the representative of the State Forestry Commission, has a Forest Service appointment which will permit him to employ federal patrolmen and certify to their services on Forest Service payrolls. The state forester is given as much authority and latitude as possible in the expenditure of federal funds, in the belief that he should be placed in practically the same position as the national forest supervisors, by allowing him a wide degree of discretion while at the same time making him fully accountable for results. He selects the federal patrolmen, subject to Forest Service approval, instructs them as to their duties, and supervises their work. He has supplied the Service, at its request, with a comprehensive fire plan, including maps showing the areas to be protected, the headquarters and approximate routes of the federal patrolmen, and all features necessary to a clear understanding of the state's plan of fire control.

The federal patrolmen are to have such police powers for the prevention and control of forest fires as the laws of New Hampshire provide; they are authorized to employ assistance in fighting fires; and they are to be equipped with fire fighting tools.

The Forest Service will inspect the coöperative work on the protected areas, and it is authorized to withdraw its approval of any such area or terminate the employment of the state forester or of any federal patrolman.

The coöperation will, I believe, result in great benefit to New Hampshire, and the federal government is glad to help a state that has done so much, although just recently, in providing its forests with protection from fire. Similar work will be done in other states. Maine, Vermont, Massachusetts, Connecticut, New Jersey, Maryland, Wisconsin, and Minnesota have requested federal coöperation in forest fire protection. Agreements with Maine, New Jersey and Wisconsin are before the Department and it is probable that before July 1 they will have been signed by the Secretary of Agriculture. During the present season not more than $10,000 will be expended in any one state. The Forest Service has taken the view that this sort of coöperation, being entirely new to it, should be conducted on a restricted scale until the best methods have been determined by experience, and that it should use the funds available for the purpose to encourage local effort in as many different states as possible. I am exceedingly enthusiastic over this work and the opportunity given for the most practical kind of coöperation with the states. I look upon it as the beginning of a great work in protecting the forests of the country from fire, especially those of the eastern states. I feel confident that the early results of this coöperation will encourage states which have no forest fire protective systems to provide for them and make adequate appropriations, so that they may have fulfilled the requirements of the Weeks laws and thus be in a position to receive federal aid.

PLATE I.

THE FOREST AS WE WISH TO KEEP IT

A BIRD'S-EYE VIEW OF THE NOONTOOTLY RIVER VALLEY IN NORTHERN GEORGIA, FROM ROCK CREEK DIVIDE. THE MOUNTAIN SLOPES ARE HERE COVERED WITH FORESTS

PLATE II.

ENTER THE MOUNTAINEER

HE HAS BURNED A PLOT AND LEFT THE TREES STANDING, AND AMONG THE DEAD AND BLACKENED TRUNKS HAS SOWED CORN. A CORNFIELD IN DEADENING ON SUMMIT OF DIVIDE BETWEEN ROCK AND LONG CREEKS IN NORTHERN GEORGIA

PLATE III.

EXIT THE MOUNTAINEER

HE HAS FOUND HE COULD NOT FARM ON HIS LAND. AN OLD ABANDONED FIELD ON SUMMIT OF DIVIDE BETWEEN DAVIS AND STOVER BRANCHES OF NOONTOOTLY CREEK IN NORTHERN GEORGIA

PLATE IV.

THE END OF IT ALL—RUIN, WASTE, DESOLATION

EROSION OF ABANDONED FIELDS
IN NORTHERN GEORGIA

PRESENT FOREST PROBLEMS OF MASSACHUSETTS

By ALLEN CHAMBERLAIN.

FORESTRY in Massachusetts was developing in a most encouraging manner until the advent of the legislature of 1911, when it became to a considerable extent the plaything of politics, and it is more than suspected that the element of personal animosity has contributed to the obstacles thrown in the path of further advancement. Two years ago, at the behest of the governor, the work of suppressing the gypsy and brown-tail moths, those terrible forest pests against which the state has so long been fighting, was added to the forester's labors. To enforce the law requiring the suppression of these insects, and to spend the state's contribution of money to this end with effectiveness and without arousing local jealousies, is a difficult task. Nowhere in the service of the state is the force of political pressure felt more persistently than in this work. Through that office nearly a million dollars is expended annually, and while only about one-third of this comes directly from the treasury of the state, it must all be applied under the general direction of the state's director. It is not easy to provide for the spending of such an amount of money in public work, and to guard against waste and dishonesty, and it is equally difficult to administer the somewhat drastic law behind the work without at times treading upon the toes of high political influence. It was an unfortunate day for forestry in Massachusetts when this moth campaign was saddled upon the forester's office.

Throughout the present session of the legislature the office has been the subject of attack, chiefly on account of the moth work, charges being made which were entirely unsupported by reliable evidence, and which fell flat after a thorough investigation of the department had been made by an investigator appointed by the governor, who is himself not friendly to the work. As a result of the pulling and hauling incident to this conflict the several forestry bills all fell by the wayside, deserted even by the members of the committee on agriculture. Only one measure, an amendment to the forest fire laws, succeeded in passing, and that came through in a sadly riddled state. This was in spite of the concerted efforts of the Massachusetts Forestry Association and the Boston Chamber of Commerce, both of which labored energetically through special committees in support of several bills.

Not in many years has Massachusetts been subjected to so terrible a fire scourge as has fallen to her lot the past spring. By the middle of May the losses were easily twice as great as for the entire twelve months of 1910. And yet during the height of this fire season, when the papers were daily reporting fires from all parts of the state, ranging from a few hundred acres in extent up to ten thousand acres, the legislature rejected, almost without debate, a bill calling for $10,000 and authority to establish a state fire warden. This bill was supported by the Massachusetts Forestry Association, by the Boston Chamber of Commerce, by woodland owners and timber operators, and it was presented and backed by members of the legislature in every way qualified to command the attention of their fellows. Strangely enough it was the members of the committee on agriculture who rallied to its defeat, running into the lobbies even to summon votes to insure their end. When the farmers of Massachusetts

play politics to that extent at the expense of a vital question affecting their own woodlands the situation is rather discouraging. One is led to wonder if the enthusiasm for forestry exhibited in past years was really genuine, and if these legislators actually reflect the wishes of their constituents.

There is no state in the country where forestry has a better opportunity to succeed commercially from the very start than it has in Massachusetts. Here are vast tracts, in all parts of the state, perfectly adapted to the production of the best timber, and valuable for nothing else. Most of this area is today producing only inferior mixed growths, which, at present stumpage values for good timber, it does not pay anyone to grow. To hold one's woodland property in such growth is like investing money in two per cent securities when equally sound investments can be found which pay four per cent. Moreover, Massachusetts has an active home market for this timber. But real and widespread interest in commercial forestry in this state will never be aroused until Massachusetts does two fundamentally important things. First of all the fire hazard must be reduced to a minimum, and second the present system of taxing forest property on the basis of a house and lot must be put aside with such other antiquities as bull's-eye watches, flintlock guns, and overshot water wheel saw-mills.

To stop the fire loss is a comparatively simple matter. Massachusetts has law enough on the subject in the main at present. What is lacking is a whole-hearted public sentiment which will demand the enforcement of those laws. When a man knows that his neighbors will regard him as more lawless than a horse-thief if he starts a fire out of doors under dangerous conditions, thereby jeopardizing the property of the entire community, he will think twice before he strikes the match, and the chances are that he will decide not to strike it. Now and then a fire will get started from some cause or other, of course. Even in Germany they have fires in the forest occasionally. But these fires need not run over ten or fifteen square miles, wiping out houses and barns as they go, and thousands and thousands of dollars' worth of forest. The state must see to it that this loss of taxable property is prevented. It must require the towns to install adequate and up to date equipment for combatting such fires as do get started, and it must see that an efficient organization is maintained to use that apparatus. Patrols must be required during dangerous times, and lookout stations should be provided on the heights. By manning a few of the many observatories already in existence in various parts of the state a lookout system could be inaugurated at trifling expense, for it must be understood that it is only during the dryest times that this watch service would be required. To set up an efficient organization in every town, and to see that these organizations know how to use their weapons and to meet their enemy, a state warden in chief is essential, a man who knows his business, one who has had his lesson scorched into him on the fire line, and who can teach and command. His authority should be defined by legislative enactment, and his powers should be broad. Such a man could easily be found, and his pay should be sufficient to attract the best man in the country, and to hold him on the job.

Massachusetts has already recognized the need of providing the towns with modern tools for fire fighting by making available the sum of five thousand dollars a year of state money with which to assist the less well-to-do towns in thus equipping themselves. But what is the use of putting machine guns into the hands of men ignorant of their mechanism and use? It requires a systematic organization and training to use effectively a battery of chemical extinguishers in a forest fire. Moreover the state should have the right to inspect from time to time at least such equipment as it helps to pay for, to

insure its being kept in proper fighting order. If the state pays half the cost of a wagon it has the right to know that it is properly housed against the weather, and that the extinguishers are not allowed to freeze and burst. The duties of the state warden, who, of course, should act under the orders of the state forester, would be many, and profitable to state and to towns alike. There can be no question as to the profitableness of an annual investment of ten thousand dollars for such a service. The state is today spending a like sum yearly in making forest plantations, every one of which runs the hazard of fire owing to the hit or miss arrangements for fire fighting which obtain in most of our country towns. Better suspend the reforestation appropriations and devote the money to guarding what we have against destruction. At present forest plantations are a gamble.

To meet the taxation problem is not so simple since it has been held that under the Massachusetts constitution the legislature cannot classify property for taxation purposes. All taxes must be proportional. A strenuous effort was made a year or two ago to have the constitution amended so that classification would be possible, and although failure was the only result hope has not yet been abandoned. Until this is brought to pass so that forest land may be assessed on a land value each year, while the crop is allowed to pay its tax only upon maturity, forestry as a business cannot thrive as it should. But pending the arrival of that happy day when woodland property is assessed on a logical basis, it is the duty of the state to insist upon the control of fires, and to assist in that control in a practical manner.

Massachusetts has a great opportunity to grow timber as a by-product on some of her state and municipal lands. During the past twelve years the state has been buying forest lands on its greater hills, and setting them apart as recreation grounds, to be maintained in natural condition. In this way six reservations have thus far been established, all in the central and western counties. To be sure the aggregate area is not great, only twelve to thirteen thousand acres, but it is all wild forest land, admirably adapted to timber culture, and good for nothing else aside from the recreation feature. On some of these timber plantations have already been started by the commissioners in charge, but much more should be done, and doubtless will be done as the years progress, thus supplanting the largely worthless second growth woods with really fine forest. There is not the slightest reason why these rehabilitated forests should not in time be made to yield a revenue. From portions of these areas, at least, the timber can be harvested without seriously interfering with their value as recreation grounds. There is every reason also why the state should continue this policy of buying reservations in the hilly sections, but for the specific purpose of reforesting, the recreation feature becoming secondary.

Then, too, many of the cities and towns of the state already own lands, in connection with their water supplies, which might easily be made revenue producing if devoted to timber growing. Such a use is certainly in no sense inimical to the water supply, and unless they are so used these lands become an unnecessary burden upon the communities owning them through the failure to develop their potential possibilities. Why charge the keep of these lands entirely to the annual tax levy? Why not put under management the existing woodlands on these watersheds, and plant up the remainder with timber trees? A year or two ago the state forester put these questions to the cities and towns of the state, and ten responded at once asking to be given professional advice. Some of these have already begun planting, but there are many more that should be interested in this plan, and the state forester is ready to lend them all the help they require in order that they may make a beginning. Timber could be grown on such lands very cheaply

since the cost of the land itself does not become a charge against the timber, it having been purchased for another purpose, and since it could not be devoted to any other use in connection with its water conserving properties. Nor does the tax problem burden their publicly owned tracts. The timber would be a by-product of pure "velvet."

Doubtless when the state has decided to put an effective brake on the fire evil greater interest will be taken in such state and municipal forests, as will certainly be the case with private enterprise in this field. But where state and municipal interest would probably respond at once, could the fire hazard be largely eliminated, private interest will lag until the tax problem also has been solved. Both problems are today being juggled with by the politicians, and they will continue to be until the public sentiment of the state declares that they must be considered on their merits, and solved in a thorough-going and permanent fashion.

Such progress as has been made for the betterment of the woodlands of Massachusetts has been well-considered on the whole, and no real retrogression is possible. Progress has only been temporarily checked by the political situation of the moment. Perhaps in the end it will prove to have been for the best. Already the agencies which have chiefly contributed to the past gains have shown signs of renewed zeal, and plans are being made with care and much forethought to arouse the lagging public sentiment of the state, and to carry on an aggressive campaign against the reactionary element in politics.

The Massachusetts Forestry Association has been able to accomplish far more for the advancement of forestry in the state than its enthusiastic founder, the late Joseph S. Nowell of Winchester, or any of his devoted co-workers ever dreamed possible in so short a time. Those men and women who had in charge the shaping of the policies of the association, laid the foundation of the forest policy of the state. What they did was not accomplished by sitting in somnolent council, nor through making speeches in public gatherings. The successes of the association were due to the forceful daring of a few leading spirits, often at the sacrifice of personal convenience plus many contributions of money when the work of the association demanded greater funds than the treasury could supply. It took nerve and conviction for example to lead the association to employ a forester for the benefit of the state at large after the legislature had more than once refused to create a state forest office. That action served to show the usefulness of such an officer, and the following year the legislators took the hint.

Since then the state forester's office has seemingly been expected to conduct not only the field work for forest extension, and for fire suppression, but the missionary work as well, and largely single-handed. A renewal of the policy of close coöperation between the forester's office and the association will undoubtedly result in far greater advancement than would otherwise be possible. Such coöperation is not as simple in practice as it might seem at first glance. It involves a vast deal of self-restraint on the part of the coöperators. The best intentioned efforts on the part of a citizens' organization may easily be mistaken for meddlesomeness, or a desire to unduly interfere with the official. The forester has a right to expect from a forestry association all the counsel and encouragement that it can give, and if the two agencies come together with a true singleness of purpose to advance the interests of the cause they both are pledged to support, and without any thought or attempt to make political capital or personal aggrandizement out of campaigns they plan together, there will be small chance for misunderstandings to arise.

The recent lively interest manifested in forestry by so important a commercial organization as the Boston Chamber of Commerce is a most hopeful

YELLOW POPLAR ON NOONTOOTLY CREEK, NORTHERN GEORGIA

CHESTNUT INJURED BY REPEATED SURFACE FIRES BETWEEN ROCK AND FORTNER CREEKS, NORTHERN GEORGIA

sign, not only for Massachusetts but for New England as a whole, for the membership and influence of the Chamber extend over that entire section. Through an energetic committee on forestry, composed of active business and professional men, some of them lumbermen, and all much interested and well-posted in the subject, the Chamber is working in harmony with the forestry association, and is ready to enter fields not so readily accessible to the association. The machinery for producing important results is, therefore, well-nigh perfect in Massachusetts, and there is no reason why it should not work smoothly and speedily. The test will come during the next twelve months.

A RAILWAY'S FOREST ENTERPRISE

By FILIBERT ROTH.

IT IS well known that the Canadian Pacific Railway Company for years past, has been actively engaged in the agricultural development of the great Canadian Northwest. Not only has the company encouraged and assisted agricultural settlement, but it has established experiment stations, demonstration farms, irrigation enterprises, etc., to develop right crops and right methods for the best utilization of the great plains lands.

Of late this company has turned its attention also to forestry. As a holder of large areas of forest lands in different portions of Canada, notably British Columbia, it has begun work in the usual quiet and yet energetic and businesslike way which so long has been a distinguishing feature of this company. The objects and policy of the company, as indicated by the head of the forestry department, are primarily to develop thorough protection for the great forest wealth along the lines of the railway. That this is a most timely enterprise, meeting with the hearty approval of every right-minded person, interested in the welfare of Canada, goes without saying.

The necessity for this was amply demonstrated by the experience of 1910 and by the enormous destruction of forests of other recent years. But in addition to this work of fire protection, the company plans also the establishment of a regular forest service to take charge of certain forest tracts and develop on these tracts a system of forestry, well planned and thoroughly suited to the country, to the forest, the land and climate, and to the economic conditions of the different regions in which these forests are to be selected. That such work will serve, like the agricultural stations, as a valuable object lesson, is quite apparent. That these forests may also serve as supply areas for the timber used by the company, would seem quite natural, though this appears rather secondary in the program at the present time. At present the company has a number of educated young foresters in addition to its old staff of experienced timbermen and all in all, it has probably the best organized and most promising forest service of any private concern in the New World.

That this development will serve a most valuable purpose, not only for the railway company itself, but for Canada and for each of the provinces, is evident; and the work will be watched with great interest by every friend of forestry. Good Speed!

REPRODUCTION OF ENGELMANN SPRUCE AFTER FIRE

By L. J. YOUNG.

I.—PARKS AND THEIR ORIGIN.

MUCH of the beauty and picturesqueness of the extensive forests of spruce and balsam that clothe the higher slopes of the mountains in southwestern Colorado is due to the many so-called "parks" that are scattered through the timber. As locally used, the term means any grassy opening in the forest, regardless of size, for they vary in extent from less than a single acre to many hundreds of acres. That they have been rightly named, anyone must admit, especially if seen in early July just after the snow has left them. Then they are covered with thick, fresh grass and an abundance of brightly-colored blossoms from the big, gorgeous columbine of the Rockies to the delicate, little, blue bells of the aconite flower. The whole effect of the grass, the flowers, and the little scattered clumps of trees cannot be excelled for quiet, peaceful beauty, placed as it is in the midst of the big, dark forest, which offers its long, mysterious vistas as a background to the scene. A park in a city is only an imitation.

However, these parks have much more than beauty to their credit, for it is upon them that the stockman depends for a great part of the summer range, which he must have to maintain his great flocks and herds that mean meat and wool and hides to the people of the East. So we see that the park has also a considerable economic significance that is not to be despised.

Upon seeing these parks for the first time, admiration is pretty apt to be closely followed by curiosity as to the reason for the existence of such openings, where the conditions of soil and moisture are, so far as it is possible to see, the same as in the dense forest just alongside. Inquiries among the people do not give much satisfaction on this point, for all they are so wise in many things not known to "tenderfeet." But the story is there for anyone who has a chance to read it. A summer's work in the Engelmann spruce of the La Plata Mountains in southwest Colorado gave the opportunity for observations, the conclusions from which form the basis of this paper.

It is so simple that the pictures alone can almost tell it. But it will doubtless be much clearer if a few remarks are added to furnish the connecting links and bring out certain facts that the pictures do not show.

Figure 1 shows part of a stand of fire-killed timber, where the damage has been comparatively recent, since most of the trees are still standing. Not only has the timber been killed here, but all the young growth, together with the forest floor, has been destroyed. After such a catastrophe, one of two things usually happens. Either grass gains possession of the ground soon enough to seriously hinder the return of the spruce by seeding, or the light seeds of the aspen blow into the area in large numbers and establish a dense stand before even the grass has had a chance. The picture shows the grass and shrubs appearing in this particular case, as well as a few spruces in the background that have come up since the "burn."

As time goes on, one dead tree after another blows over and begins to decay, until the timber is practically all down, as in Figure 2. This is the next step in the process that was begun by the fire. The grass has become still more firmly established, and part of the timber that went earlier has decayed and disappeared. The exposure of the area to the action of sun and wind has made conditions very unfavorable for the moisture loving spruce, so that only a few have gained a foothold near the edges of the "burn."

After the timber is once down and in contact with the ground, the processes of decay go on much more rapidly, and in a relatively short time, the area assumes the appearance of that in Figure 3. Most of the timber has gone back to the soil and air from which it came, and what was once a heavy spruce forest has already become a summer home of the cattle, tempted thither by the abundant grass.

The final decay of the small remaining amount of dead wood leaves a clear, grassy expanse, either dotted with scattered spruces or absolutely treeless, and the park has arrived at completion. (See Fig. 4.)

Now someone may ask whether some parks at least may not owe their existence to windfall. It is true that large areas of spruce are sometimes blown down, thus forming openings in the woods. But there are several reasons why these areas do not become parks. For the sake of completeness, it may be well to briefly state those reasons here.

An unusually heavy wind may overthrow all of the timber on a given area, but the destruction is not complete, as in the case of fire, since many of the small trees, most of the seedlings, and the forest floor, or duff, are left unharmed by the wind. The presence of the duff and the shade afforded by the down timber tend to prevent for a time the unfavorable drying out of the soil, so that the seedlings that are left have a chance to readjust themselves and continue to grow, and seed that blows in from the nearby timber has a better chance to germinate. On account of these conditions, the area is again more or less covered with a young forest before the down timber has had time to disappear.

Again, most of the parks occur on south slopes, and practically all of them occur on south, east, or west slopes. These exposures are the ones that are most subject to drying-out, so that fire starts most easily on them and also runs more readily after it is once started. Practically all areas that still show evidences of burning-over are also on the same slopes. This strengthens the appearance of a relation between the two.

A little digging in any park soon reveals charcoal not far below the surface, showing conclusively that fire once passed over the area and found timber to feed upon where there is none at present.

The circumstances, therefore, seem to point to the conclusion that fire, and fire only, has been the primary cause of parks.

II.—THE FATE OF THE PARK.

Next comes the question, Does the park, once formed, always remain a park?

Take the case of such a park as is shown in Fig. 4, where a few spruces have succeeded in starting before the grass came in. On account of their open position, such trees have branches clear to the ground. These branches shade out the grass around the base of the tree and keep the soil relatively moist and loose. Such conditions are favorable to the germination of the seed, some of which the tree is bearing nearly every year. The result is shown in Figure 5. A large number of seedlings of all sizes have grown up around the "mother tree" in the area protected by its branches.

As these trees continue to bear seed that is carried here and there by the wind, other trees occasionally succeed in starting at some distance from the

mother trees, in spite of the grass. (This probably happens chiefly during unusually favorable seasons.) Such trees in turn become the centers of additional groups. The seedlings themselves in each group grow into trees, bear seed, and continue the work of conquering the grass. Each group also continues to spread and so shade out more grass, which favors the starting of still more seedlings. All of this takes an immense amount of time, on account of the slow growth of the existing trees and the difficulty with which new ones get started.

But, slow as it is, there comes a time when the number of groups has increased sufficiently and each one has so spread out that all of them are in contact with one or more other groups. This is the last stage before the complete return of the forest. Small openings, a few yards in diameter, still occur, but most of the land is now covered with trees. Figure 6 shows a portion of such a stand. Practically all of the trees in the picture have come from the large mother tree, marked "x." The opening here is only ten paces wide. It is interesting to note the wide variation in size, and so in age, of the different trees. This stage also shows that the very small parks are only a result of the breaking up of the large ones.

Ultimately, of course, all of the small openings are filled up, and the forest cover is reestablished after an interval of hundreds of years. Extensive stands occur at present which have obviously originated in this way. They are extremely uneven, aged, and, though the cover is complete, can still be easily resolved into the original groups with the big mother tree distinguishable in the center of each one. The very conical form of these mother trees and the numerous, persistent branches that extend clear to the ground prove that they lived a great part of their existence in the open, rather than in such a closed stand as the present one.

The filling-in process, described above, is further hastened by a seeding in from the side along the edges of the timber that remained uninjured by the fire.

Fig. 7 shows a narrow arm of a park that is being rapidly filled up from the end and sides.

III.—REPRODUCTION OF SPRUCE UNDER ASPEN.

Since the seed of the aspen is very much lighter than that of the spruce, it is carried by the wind for longer distances and in large numbers. When such seed falls into a fresh "burn," where grass has not appeared, it produces a dense stand of this inferior wood. If there were such a thing as a portable pulp-mill, however, there ought to be some money even in aspen.

These stands often cover extensive areas, growing to an average diameter of twelve to sixteen inches and an average height of sixty to seventy feet. Apparently they own the land. But——

Usually the aspen is surrounded by spruce forests. Now spruce can start and grow well under the shade of aspen, but aspen cannot live under spruce. Every year some spruce seed blows into the edges of the aspen stand and starts to grow. In time, the trees thus started also bear seed, which they scatter farther into the ranks of the aspen. (See Fig. 8.) Finally, the spruces and balsams overtop the aspen and kill it with their heavy shade. The aspen is also at a disadvantage in being a short-lived species, while the spruce is long-lived. Thus it is that aspen is called a "temporary" type. The spruce has triumphed again, but in this case does not show the group arrangement that is so characteristic when the park was the first step in the process.

It was also found that spruce sometimes reproduces without interference from grass and without the aspen stage upon areas near timberline that have been denuded by fire or by snowslides.

FIG. 1.

FIG. 2.
ENGELMANN SPRUCE

FIG. 3.

FIG. 4.

ENGELMANN SPRUCE

FIG. 5.

FIG. 6.

ENGELMANN SPRUCE

FIG. 7.

FIG. 8.

ENGELMANN SPRUCE

FORESTS AND STREAMFLOW

DISCUSSION of the relation of forests and streamflow is neither new nor peculiarly American. Engineers, foresters and hydrologists in Europe have been debating it for many years with the result that while controversy continues as to the precise relation of the forest on the watershed to the flow of the stream, European opinion has accepted as settled the opinion that forests are necessary to the maintenance and equability of streamflow, and has acted upon it.

In this country practice, since we took up forestry, has followed the same conclusion, but when the judiciary committee of the House of Representatives gave its opinion that the proposed Appalachian national forest legislation must stand or fall by its effect upon navigation, the whole question was thrown open to be debated with some heat and some scientific thoroughness. This controversy is recent history. Several printed papers were contributed to it, the first being that of Lieutenant Colonel Chittenden, of the army engineer corps, who argued ably and forcibly against the accepted view. His position was substantially that held, so it is understood, by a majority, though not all, of the army engineers. Colonel Chittenden was answered by Prof. George N. Swain and others. Outside of those whose preconception was supported by the views of the army engineers, there was an unwillingness to regard the army men as the only engineers in the country, and when eminent civil and electrical engineers controverted their views, and the great national organizations—the Society of Civil Engineers, and the Institute of Electrical Engineers—were put on record officially as believing in the beneficial effect of forest cover on streamflow and the actual need of such cover to protect watersheds, the normal judgment of the layman seemed to be restored to its former basis.

Then came the report of the Chief of the United States Weather Bureau, issued something over a year ago as a congressional document and widely distributed. This raised a distinct issue between two bureaus of the Department of Agriculture—the Forest Service and the Weather Bureau; but the restraint of department discipline prevented a rejoinder by the Forest Service, and the controversy was carried on outside, the weightiest contributions to it as opposed to the Weather Bureau's position being the articles by able specialists published in AMERICAN FORESTRY for April, 1910.

These steps in the controversy are recalled because it is reviewed at some length and with an intelligent understanding of its animus in the *Indian Forester* for March and April, 1911. The *Indian Forester* quotes an editorial from the *Allahabad Pioneer* referring to the controversy and then publishes a letter from one of its correspondents calling attention to the *Pioneer* article and suggesting that "the whole makes very interesting reading and those who live for tariff reform and similar many-sided questions and are in need of something new would be well advised to add this subject to their list as it is one not likely to be exhausted in their time." The *Forester* then states the two contentions of the American Weather Bureau as follows: (1) that forests have no effect upon the amount of rainfall; (2) similarly, that forests have no effect upon the severity of floods; and it is concluded that no case can be shown where deforestation has augmented drought or flood. To the dis-

cussion of these propositions the *Forester* contributes a few observations out of experience in India:

"As regards (1) there are in India no series of reliable observations carried out over a sufficiently long period to throw much light on the subject.* The Proceedings of the Asiatic Society of Bengal, 1887, Part II, No. 1, contain an interesting article by Blanford. He showed that the only satisfactory evidence would be that obtained by comparing the rainfall of a district when well wooded with that of the same district after deforestation. He endeavored to apply this principle to the southern Central Provinces. He gives evidence that in that area prior to 1875, while five-sixths were nominally under forest, so much damage had been done by *dahya* (i.e., shifting) cultivation that by far the greater part of the forests had become devastated. He quotes the introduction of the Central Provinces Gazetteer of 1870 where Mr. C. Grant says:

" 'The tree forests of the Central Provinces have, however, been so much exhausted, mainly owing to the destructive *dahya* system of cultivation practiced by the hill tribes that, except in one or two localities, the labors of the forest officers will, for many years, be limited to guarding against further damage, and thus allowing the forests to recover themselves by rest. By far the greater part of the uncultivated lands, belonging to government, are stony wastes, incapable of producing a strong straight growth of timber.'

"In 1875 the suppression of *dahya* cultivation was taken in hand and with such success that in 1886 Mr. Ribbentrop, then inspector general of forests, wrote:

" 'My attention was directed, during a recent visit to the Central Provinces, to the extensive growth of young forests, in areas formerly under shifting cultivation. Ten or fifteen years ago, such temporary cultivation was practiced throughout the country and thousands of square miles were thereby laid barren, year after year. Since then, this method of cultivation was stopped, and, though a great part of the area affected was subject to annual fires, a more or less dense forest growth has sprung up.'

"Blanford then compares the rainfall of the area affected by forest preservation with that away from it; and shows that while the rainfall in the preserved area, averaging about 50 inches, was greater by 6.8 inches for the period 1876-85 than it had been for the ten years before, the rainfall in the remainder of the Central Provinces had diminished by 2.9 inches. Blanford points out that the area in question of nearly 50,000 square miles is large enough to give reliable results, that its history is well known, and considers that the only points on which doubt may be thrown are the reliability of the records and the sufficiency of the periods to yield valid averages. The results of the different stations were so consistent that Blanford held that the measurements might be trusted, and it would appear that there was an increase of about 9.7 inches (or 20 per cent) due to the growth of forest.

"There are, as far as we are aware, no other reliable data in India by which the rainfall over a well wooded area can be compared with the same area when deprived of its forests. Observations carried out for a number of years in Ajmer go to show that the rainfall inside the forests is greater than outside, but these observations are not considered reliable. On the whole the general result of the enquiry is that there has been no permanent alteration in the amount and distribution of the rainfall during the past half century either one way or the other. During this period the government of India have pursued a wise forest policy by which immense areas have been maintained under forest and rescued from impending destruction. The area

*From information furnished by the Director-General of Observatories in India.

of forest under the control of the Forest Department today stands at 241,774 square miles, and the question may well be put whether India would be getting more or less the same rainfall now as it did 50 years ago if the destruction of the forests had not been checked in time.

"This question has received much attention in Europe. In the forest of Haye near Nancy, for example, a series of observations were kept up for 33 years with the result that, taking the rainfall in the center of the forest as 100 centimetres, the rainfall at the edge was 93.9 and that outside was 76.7 or a decrease of 23.3 per cent. These proportions were ascertained to be independent of the wind direction and the influence of the forests is also independent of the seasons.

"The most authoritative work on climatology is perhaps the *Handbuch der Klimatologie* by Dr. J. Hann. In Volume 1, pages 186-193, 1908, will be found a full summary of the results of European and American observations on the influence of forests upon air temperature, ground temperature, humidity, rainfall and the run-off. As regards rainfall he finds that the amount falling inside the forests in Germany is about three per cent larger than that outside. In the tropics there is reason to believe that, as shown by the example of the Central Provinces referred to above, the difference may be considerably greater than this.

"At the same time it may at once be admitted that the influence of forests on the total rainfall is in the case of India uncertain, and on the Continent, although divergent views are held, it is generally held not to be of any great importance.

"In India no doubt the total rainfall depends on the monsoon currents which are affected by the conditions which obtain in the Indian Ocean and sub-equatorial regions. Nevertheless, there is good reason to believe that the rainfall is heavier by perhaps nine per cent over well wooded districts than it is over similar adjoining districts which have been deprived of their forests."

The *Forester* then reviews briefly the contributions to the discussion by John H. Finney, Professors Glenn, Roth and Swain, and Barrington Moore in AMERICAN FORESTRY and then adds the following statement in regard to various districts of India:

"In India reliable data as to severity of floods in main rivers fed from catchment areas under forest conservation as compared with those in rivers fed from catchment areas which have suffered from deforestation are in the nature of the case practically *nil*, and it seems that nothing short of a series of observations carried out on a river fed from a well wooded catchment area and again on the same river after all the catchment area had been denuded of its forests, could absolutely prove the effect of forests on the severity of floods in the main rivers. The enquiry lately carried out shows on the whole that there is no increase in the severity or duration of floods in most of our main rivers, and here again it may well be asked what would have been the state of affairs had not the Government of India pursued a consistent forest policy for the past fifty years? It is owing to this policy that a considerable proportion at least of the catchment area of most of our great rivers is well wooded and that the evils following deforestation have been minimized.

"If evidence regarding the influence of forests on floods in the main rivers is wanting, or circumstantial only, it is otherwise concerning the floods which occur locally in the catchment areas, and the damage and erosion of the hillsides which surely follow disforestation. It is here that the protective effects of forests and the injuries caused by their removal is most marked and reports from numerous sources show that in India as elsewhere disastrous effects have closely followed disforestation.

"Mr. McKenna, the Director-General of Agriculture in Burma, writes:

" 'The dry zone of Burma, and particularly Myingyan district, affords an excellent example of the evil effects of erosion. The country has the appearance of rolling landscape, the tops of the heights consisting of hard shallow soil (the Kyatti Kon of the Burmese cultivator) which is incapable of producing anything but the poorest crops of sessamum, cotton and jowar. The rainfall is low, but heavy falls suddenly take place and the water which falls, having no chance of being collected and held by humus, rushes down into the hollows, carrying off the soil and breaking up the country by innumerable small waterways. So broken have these lands now become (not to mention that practically only the rock is left) that cultivation on a large and successful scale is impossible. As a general rule, the eroded soil is not deposited at all, but is swept by the smaller torrents into the large waterways, where some damage may be done to crops on the banks. Afterwards it reaches the Irrawaddy and helps to form the sand-banks which imperil and impede navigation on that river and in the long run finds its last resting place in the ocean. 'The oceans are the burying ground of the continents' is one of the maxims of the geologist, but the process can be lengthened and impeded by afforestation, so that the loss to mankind is considerably lessened.'

"The dry zone of Burma was formerly covered with forest which has now for the most part disappeared.

"In the Punjab much damage has been done by erosion caused by floods following disforestation in the outer slopes of the Siwaliks and in the Pabbi Hills. Enquiries made in connection with the Upper Jhelum Canal Works have shown that many of the streams that run off the northern slopes of the Pabbi range of hills, formerly covered with forests, but now bare, have scoured out great ravines and channels and cut away much valuable land.

"The case of the Hoshiarpur Chos is well known. Here owing to destruction of forest growth and excessive grazing, destructive torrents had formed, and these carried vast deposits of boulders, silt and sand down on to the fields below. These torrents put out of cultivation and rendered useless very extensive areas of land. Following the example of France, a special act was passed in 1900 providing for protective measures on the hillsides which are now slowly being reafforested. The damage is already reported to be diminishing.

"In Bengal extensive denudation has taken place in Chota Nagpur and Orissa, and the consequent damage by floods and erosion is becoming alarming. A committee has been appointed to examine and report on the question, and have come to the conclusion that the only way to stop the damage is to protect the forests, and as in Hoshiarpur they recommend special legislation for this purpose."

THE WAGON WHEEL GAP EXPERIMENT STATION.

Reference has already been made to the issue that was raised between the Forest Service and the Weather Bureau when the Chief of the Weather Bureau entered this discussion with his report on the influence of forests on climate and on floods. A very sensible and useful way of harmonizing this controversy has been reached through the establishment of an experiment station in the Rio Grande national forest which is to be controlled jointly by the Forest Service and the Weather Bureau, the object being to determine the effect of forest cover upon high and low water stages of mountain streams, the run-off of mountain watersheds as compared with annual precipitation and the erosion of the surface of the watershed. A detailed description of the station at Wagon Wheel Gap and the methods of the experiments proposed was given by Mr. Carlos G. Bates in the last number of *The Proceedings of the Society of American Foresters.* Necessarily these experiments will not

give any immediate results—they can only be satisfactory when pursued with great care for a term of years. Briefly the plan is to compare two watersheds adjacent to each other on which practically the same conditions exist, one being forest covered and the other denuded. Mr. Bates describes the two watersheds as follows:

"The two watersheds at the Wagon Wheel Gap Experiment Station are very much alike with respect to topography, soil, and vegetation cover. A good deal of difficulty was encountered in finding two such similar areas at an altitude which represents a mean between the heavily-watered mountain tops and the low-lying areas where the streams are not permanent. The area of Watershed A is 223 acres and of Watershed B 212 acres. The former has a total length of 7,100 feet and a maximum width of 1,800 feet. The latter has a length of 4,600 feet and a maximum width of 2,500 feet. It may thus be seen that Watershed A is longer and narrower than Watershed B. The visible lengths of the two streams are 3,400 and 2,300 feet, respectively. Both streams have an easterly bearing, flowing out of the mountains on to the broad bottom of the Rio Grande, where, excepting at the highest stage, they disappear in the loose soil of the river bottom.

"The altitude of Watershed A is from 9,375 to 11,360 feet, while Watershed B lies between the elevations of 9,240 and 10,940 feet. At these elevations precipitation is sufficient to feed permanent streams. I think it is safe to say that the streams in question have never gone dry, since the season of 1910 represents an almost unprecedented drought in this locality and the streams at the end of the summer showed discharges of .075 cubic feet per second and .050 cubic feet per second, respectively, or about 20 per cent of the annual mean discharge.

"In each case the forest cover consists of Douglas fir in the lower reaches and Engelmann spruce at the higher altitudes. Douglas fir on north slopes is representative of the Rocky Mountain form of this tree. On south slopes it forms an open stand of fairly thrifty and commercially valuable trees, the litter in most cases covering the ground only in the immediate vicinity of the trees. On north slopes the Douglas fir becomes more and more supplemented by Engelmann spruce as one proceeds upward. At the heads of the watersheds the Engelmann spruce stands have been considerably damaged by fire, followed by the replacement in some cases of Engelmann spruce, but more generally by stands of aspen in which the forest floor conditions are quite good.

"Douglas fir and Engelmann spruce undamaged by fire occupy about 40 per cent of the area of each watershed. In Watershed A the remainder is made up of aspen, under most of which there is good reproduction of coniferous species, and a small area of bristlecone pine. The balance in Watershed B is made up almost wholly of aspen in which there is a smaller proportion of good reproduction.

"Both watersheds have been partially burned, the most recent burns being about 17 years old, the earliest as much as 50 years. The only burn not restocking is at the head of Watershed A and represents about 2 per cent of the area of that watershed. Steps have already been taken to obtain a stand of Engelmann spruce on part of this area, by seed-spot sowing, and similar work has been done in the more open areas of Douglas fir on Watershed A. While the effect of this planting, within the period of the experiment, can be but slight, yet any improvement of the forest cover of Watershed A occurring simultaneously with the deforestation of Watershed B must accentuate the desired contrast.

"As a whole, the forest-cover conditions on both watersheds are fairly representative of conditions throughout the Rocky Mountain region which

furnishes water for irrigation. The areas most subject to erosion are the steep, south slopes where the gradient is frequently as much as 35 degrees and where the trees are far apart.

"At several points on the watersheds there are small areas of "slide rock," and other areas where a soil has only recently been created. Outcrops of rock in place are few in number and represent an extremely small area. Throughout, the fine black loamy soil is interspersed with small stones, yet the depth of soil in most cases is considerable. The streambeds are littered with boulders which have rolled down the steep slopes, and with trunks of aspen trees which are plentiful and of good size along the streams. The debris shows no evidence of erosion and it may be assumed that powerful floods have not occurred in either watersheds for many years. In many places the streams are invisible, flowing under the loose boulders. This feature is more marked in Watershed B than in A. A notable feature is the short branch stream coming in from the north about 400 feet above the dam on Watershed B. This comes from a spring, the water having apparently been carried on the lava substream from higher portions of the watershed, breaking out where the lava outcrops. There is, however, no reason to suppose that the water comes from without the watershed."

Mr. Bates goes on to explain that the primary work of the streamflow study is the accurate measurement of the two streams involved, continuously and without error through all seasons for a number of years. The secondary work of the study includes the measurement of precipitation, temperature and other meteorological factors which may affect the flow of these streams. He then describes at length and very interestingly the dikes, basins, weirs and still-wells by which the flow of the streams can be regulated and measured.

In conclusion Mr. Bates says that the experiment which he has described is the only one of its kind that has ever been instituted, excepted the Emmenthal experiment in Switzerland near Zürich, and he adds that in his belief it must "always stand as an example of the scientific thoroughness in the solution of forestry problems, which can only be obtained by concentrating the efforts of experts at permanent experiment stations, on the ground. The length of time involved in this experiment must be determined entirely by the occurrence of a variety of climatic conditions. Whether it be ten years or twenty, its results must affect a large number of people, and I believe that it has a claim to recognition by all those who are interested in the problem, whether they be foresters, meteorologists, engineers, irrigators, or merely farmers on river bottoms subject to inundation."

PLATE I. STEEL ROOF SUPPORTS RESTING ON TIMBERS IN BARTON MINE, THE MIDDLE STAGE, HALF TIMBER, HALF STEEL

PLATE II. STEEL GAUGEWAY SUPPORTS IN EUREKA MINE. THE VERY LATEST, ALL STEEL

PLATE III. STEEL GAUGEWAY SUPPORTS IN ENTRANCE TO ALLPORT MINE. ALL STEEL AND CONCRETE

PLATE IV. ENTRANCE TO ALLPORT MINE. ALL CONCRETE. NO TIMBERS TO CATCH FIRE AND SPREAD THROUGHOUT THE MINE

MINE TIMBERS *versus* CONCRETE AND STEEL

THE modern up-to-date mine is more and more, where possible, using concrete and steel in place of timbers. If this can be generally done the amount of timber which will be saved, according to statistics obtainable in the anthracite regions in Pennsylvania, will be approximately that covering a hundred and fifty thousand acres. It is an axiom that the price of mine timbers is rapidly increasing and the supply as rapidly decreasing. It has been estimated that the cost of timber per ton of coal mined is eight cents. The saving in mine timbers by the use of concrete and steel is readily conceded.

The accompanying diagram (Fig. 1) shows the various factors which make the timbering of a mine so costly. Decay is the greatest of these; it cannot be prevented; it can only be minimized. Foresters believe it can to a certain extent be overcome by "peeling," by seasoning, and by treating with oils and chemical salts;—but it is produced by bacteria and fungi, which perhaps are in the timber when cut or passed on from other decaying timber in the mine, and which grow through checks, cracks and nail wounds. All this can, to a certain degree, be overcome by preventive measures; but the greatest element in the decay of mine timbers is the condition which prevails in the mine itself,—the lack of ventilation and, above all, the alternating states of dampness and dryness. In the great mine disasters which we constantly read of, the cause is frequently given as decaying timbers which rot and fall burying miners and creating a condition in the mine itself which takes much labor and money to overcome. With concrete and steel "timbering" of course no element of decay enters in.

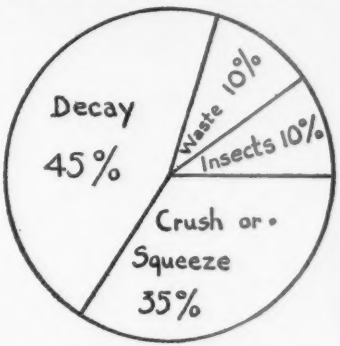


FIG. 1.

From an inspection of the diagram it will be seen that breakage, or "crush" or "squeeze" due to a sudden fall of coal and of rock, is the next largest factor. Many times the mine timbers are broken only after they have been weakened by decay. Sometimes new timbers are crushed. Concrete and steel would the better withstand the shock of this sudden deluge. Under breakage, also, wear must be considered. The cross ties in the main haulage ways, the wooden rollers, the drum laggings, are worn by constant contact with the ropes and cables, and concrete construction would obviate many of these difficulties.

Insects also are a factor in the waste of mine timbers. They are usually brought into the mines in infested timber, and passed along indefinitely to sound wood. The waste through decay or fracture of timbers though many times confined to but one part of the set, often renders the whole set useless. The sizes of timbers are sometimes too large, sometimes too small to support the weight, sometimes badly and carelessly set. And this inefficiency affects life and property.

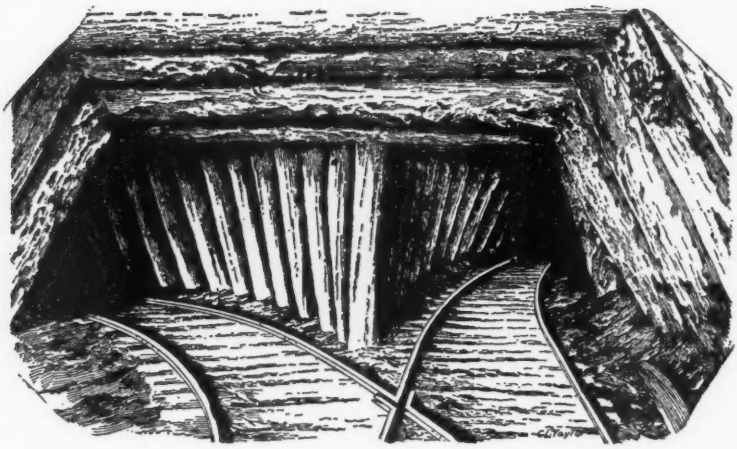


FIG. 2.

In the accompanying illustration (Fig. 2) which shows a mine timbered in the old way; it can be seen at a glance how wasteful is the giving way of one of the timbers and rendering all the rest useless. Also from the illustrations (Plates I, II, III, and IV) of the concrete and steel construction, it will be seen how much more efficient it is, for it obstructs the mine less and gives much better support to the roof. Because of the amount of timber used in the mines it has become necessary for mining companies to be also timber companies. They found that they could the better inspect their timber when it was their own and by cutting down profits in timber effect a great saving. But even now timber is often accepted at the mine in such a condition that it is doubtful whether its service in the mine would pay for the cost of setting it, exclusive of the cost of the timber. A grave indictment is the loss of life occasioned by bad setting, the criminal haste when the contract for setting timbers in the mines is given to the company which is concerned only with placing the greatest amount of timber in the shortest possible time regardless of where or how placed. Perhaps the ordinary mine owner is more concerned with the loss of property than with the loss of his men, and often when mine timbers have been so placed that they cannot properly resist the strain, the whole outlay has been either a partial or a total loss.

It has been argued against concrete and steel construction that it would not be in line with regular practice of preparing a mine for, according to the old way, timber was hauled into the mine, cut on the spot, and fitted in. With concrete and steel construction measurements must be taken and the mine must in a sense be made to fit the supports. But there is no doubt, and it has never been argued, but that the modern construction is better able to stand the strain, that it is safer to life and property and although the initial outlay for concrete and steel is great, yet in the end a saving is effected. No figures are yet obtainable as to the comparative cost.

Much has been done by trained foresters to try to prolong the life of mine timbers. They have made studies of the subject and their conclusions have had weight with mine owners. In 1906, the Forest Service, in coöperation with the Philadelphia & Reading Coal and Iron Company, planned and carried on a series of experiments to determine the best methods of prolonging the life of mine timber. The results of that study are contained in a bulletin—

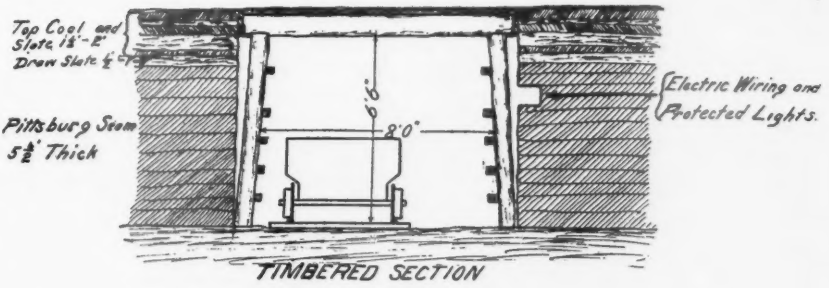


FIG. 3.

F. S. Circular 111, issued Oct. 10, 1907—called *Prolonging the Life of Mine Timbers,* by John M. Nelson, Jr. It is from Mr. Nelson's circular that the diagram (Fig. 1) and the photograph (Fig. 2) have been taken.

Experiments with concrete and steel construction have been carried on for a number of years. The mine which is best fitted out with these modern appliances is the Allport Mine at Barnesboro, Pennsylvania. It is to be noted that in connection with the new government Bureau of Mines a government mine is to be opened at Brucetown, Pennsylvania, in the near future. It is the object of Dr. Holmes, Director of the Bureau of Mines, to make this mine, run by the government, typical of actual mining conditions. Accordingly, parts of the mine are to be timbered in the old way (see Fig. 3), and parts are to have all modern appliances. It is proposed in connection with the government mine, to change the testing chamber where explosives are tried out and where experiments in the explosibility of coal dust are made, from Pittsburg to the new government mine at Brucetown. By having this chamber in connection with the mine it is thought that experiments can be made first in the chamber and then in the mine itself. In this connection, it is noteworthy that the part of the mine in which explosions are to be set off is to be entirely constructed of concrete and steel. (See Fig. 4.) And the government expects to be able to entirely control explosions within this area.

A new era for the mine is approaching, an era without the old waste, the old lack of efficiency. Explosion and fire with its attendant loss to life and property will in the future be done away with. The cost of "timber" per ton of coal will be made smaller and the annual timber consumption will be materially decreased.

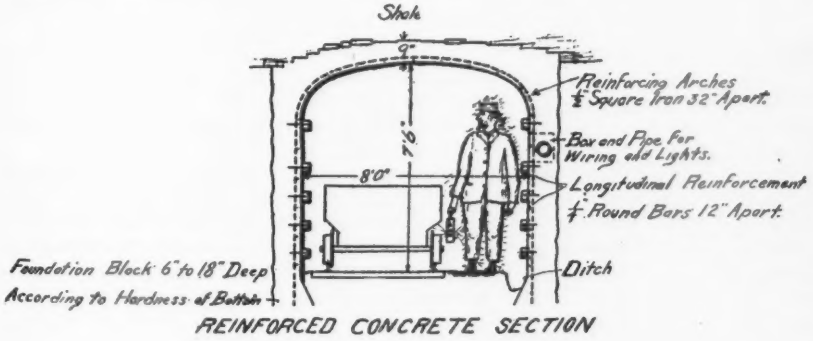
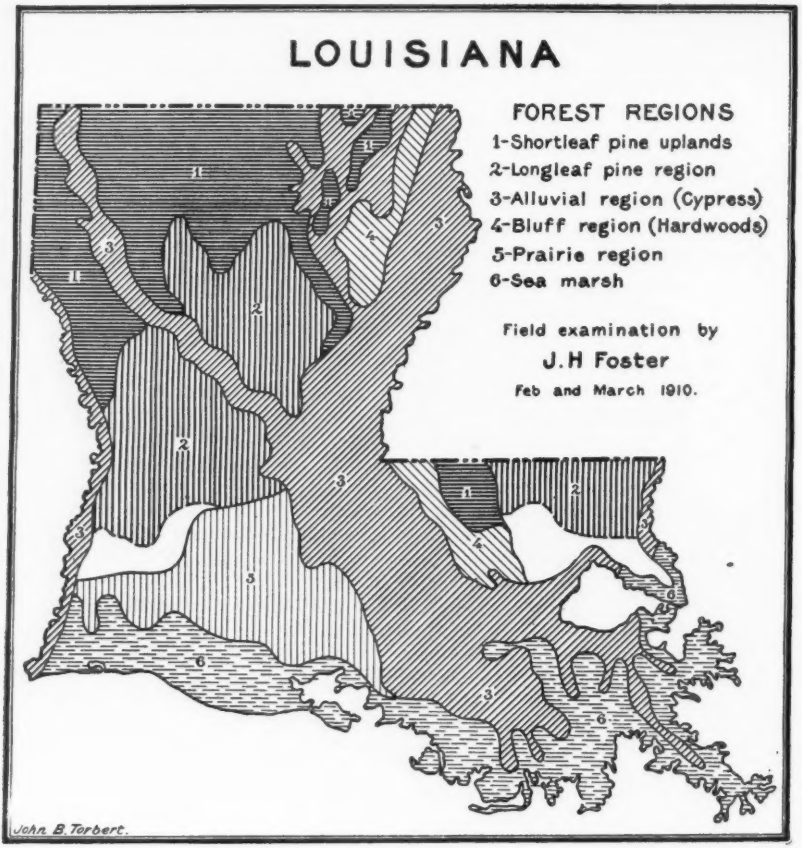

Shale
9"
Reinforcing Arches ½" Square Iron 32" Apart.
7'6"
8'0"
Box and Pipe for Wiring and Lights.
Longitudinal Reinforcement ½" Round Bars 12" Apart.
Foundation Block 6" to 18" Deep According to Hardness of Bottom
Ditch
REINFORCED CONCRETE SECTION

FIG. 4.



THE CASE OF THE STATE OF LOUISIANA

THROUGHOUT the past year an interesting situation has been developing in Louisiana. To understand it thoroughly one must go back a bit with a mental image of the state which has gradually climbed to a position which ranks second only to the state of Washington in the amount of lumber produced annually.

In 1909 the state legislature decided that an inventory of the resources of the state was necessary and appointed a conservation commission for this purpose to make a report to the legislature. Henry E. Hardtner, a lumberman, was made chairman of this commission. The commission at once began its work of making an inventory with the funds appropriated by the legislature for this purpose. This commission for the time being took the place of the state forestry bureau.

In the early part of 1910 with the assistance of an appropriation of $250 from the office of the register of the state land office and ex-officio commissioner of forestry, the government sent J. H. Foster, assistant chief of coöperation of the United States Forest Service, to look over the forestry resources of Louisiana. Mr. Foster made an extensive report covering some 120 pages to the ex-officio forester.

After review of the timber resources of the state Mr. Foster proceeded to state with great clearness the fallacy of over production. Thus:

"The usual regulation of the supply to meet demand does not hold in the yellow pine industry; the production at present is at least two or three times as great as the market normally requires. It would be a good thing for the forests if all the mills could be run on half time until the present over-supply was reduced and the prices of lumber advanced to a degree which would yield a fair profit.

The consequent effect on the forest of overproduction and low prices is deplorable. Many companies are actually compelled to leave on the ground to decay as much as 2,000 board feet per acre in tops and logs partially affected with red heart, because there is no profit in manufacturing low grades into lumber. The tendency is to haul to the mills only such portions of the trees as will make high-grade material. The lumbermen believe they are in no position to consider conservation methods of logging or to look forward to a future cut of timber on the same land. It would not be entirely just to the lumbermen of Louisiana for the state to regulate or restrict the cutting of timber and thereby increase the cost of logging, unless this increase is uniform among all yellow pine states, and the lumbermen are able to increase the prices of the manufactured product accordingly.

It seems inevitable that the reckless exploitation must continue as long as there is sufficient virgin timber to keep in operation the extensive establishments of the present time. When the big mills have passed, as they are rapidly doing in Alabama and Mississippi, small saw mill plants will be organized on a more permanent basis.

The lumbermen, however, are not without responsibility to the people of the state. They have obtained their lands at low prices and have made fortunes from the increase in the value of the timber. The chief asset of the region is being removed, and the land usually left in a desolate condition. The industry does not develop the country permanently and the earnings are seldom invested where they are of any benefit to the community. Local residents, attracted by work which furnishes them with regular wages, leave the farms for the mills, and when the mills are abandoned, they are too often not satisfied to return to the farm work, but follow the mills to other sections not yet exploited."

This report contained a great deal of valuable information on the basis of which the conservation commission made its report to Governor J. Y. Sanders early in June, 1910. The recommendations of the commission are summarized as follows:

(1) Protection from fire of cut-over pine lands.

(2) Prevention of waste in logging, such as: injury to young growth, use of valuable timber where inferior timber would answer the purpose, leaving sound logs in the woods.

(3) Establishment by gifts and purchase of a state forest reserve.

(4) Establishment of correct system of forest taxation, viz: (a) "Tax the land without the timber according to its value annually;" (b) "Tax the timber 10 to 15 per cent *when it is cut.*"

Upon the theory that the taxation of the lumbermen should be different from that of all other enterprises, as the facts set forth in the accompanying

table will show, Mr. Foster framed a revenue bill which was introduced into the legislature of Louisiana and passed before the end of the session. This revenue bill became law, but it has been inoperative the past year owing to the activities of certain lumber companies. And this is the reason why, in order to assess the license tax of one cent on pine and one-half cent on hardwoods to produce the revenue by means of which fire patrol is to be maintained, it was found necessary to frame an amendment to Article 229 of the constitution.

QUANTITY AND VALUE OF FOREST LANDS IN LOUISIANA, 1909

I. ACTUAL FOREST LANDS				
Timber Species	Total Stand (Acres)	Average Value per Acre	Total Value	Total Assessed Value of Timber Lands on a 50 Per Cent Basis
Yellow Pine	4,116,800	$10.75	$44,204,009	$125,000,000*
Cypress	520,123	12.90	6,249,912	
Hardwood	4,343,744	3.52	15,318,224	
Total	8,980,667	$6.76	$65,772,145	

II. FARM LANDS (MORE OR LESS TIMBERED)	Total Assessed Value of Timber on "Farm Lands"
(Note.—20 per cent of the more or less timbered lands of the state rated as "farm lands" are not included in the above figures.)	$25,000,000*

III. DENUDED TIMBER LANDS—(WASTE LANDS)			Total Assessed Value on a Basis of One-Ninth Value of Standing Timber
Acreage	Average Value per Acre	Total Value	
4,814,746	$1.58		$7,610,424

Figures from State Conservation Commission Report, 1910.

For in 1902 a general license act had passed the legislature carrying a license tax on the manufacture of lumber and when an attempt was made to collect this tax, the case was carried to the supreme court of the state, which held that the tax was unconstitutional and in violation of Article 229.

Upon the amendment of Article 229 of the constitution, the entire conservation program of the state was found to depend. A joint resolution therefore proposed an amendment to Article 229, which read as follows:

"Those engaged in business of severing natural resources as timber or minerals from the soil or water, whether they thereafter convert them by manufacturing or not, may also be rendered liable to a license tax, but in this case the amount to be collected may either be graduated or fixed according to the quantity or value of the product at the place where it is severed."

Note in the above amendment that no attempt is made to levy a tax on the manufacture of lumber, but on the cutting down of trees. This act protects practically all of the natural resources of the state; the timber, the oil, the gas, and the mineral.

This resolution passed the legislature subject to a referendum vote of the people at the fall election of 1910. The people voted the amendment.

Meanwhile in June, 1910, the revenue bill, framed by Mr. Foster, was passed by the legislature, but with the "tag," contained in section 9:

"Be it further enacted, etc., That this Act shall not go into effect unless and until the proposed amendment to the Constitution of this State, amending Article 229 thereof, has been adopted, which amendment is to be submitted to the people as provided by this Legislature."

Upon the technicality involved, the great lumber companies of the state have held up the revenue bill, claiming in the courts that a bill cannot be effective which depends upon an amendment to the constitution at some future time.

This revenue bill, which involves double taxation, a tax on standing timber and a tax on the timber when cut has therefore remained inoperative the past year pending settlement of the question in the courts.

The general forestry bill, therefore, stands as the achievement of the legislative session of 1910. The bill as originally framed provided for the appointment of permanent fire wardens, thus keeping those offices outside the domain of politics. Owing to political feeling, the permanent appointment was eliminated, thus changing the original intent of the bill. The text of the bill follows:

AN ACT

To amend and re-enact Act No. 113 of the Session of 1904, approved July 4, 1904, entitled "An act to establish a department of forestry; to provide for its proper administration; to provide for the preservation of the forests of this state and the suppression and prevention of forest fires; to provide for the reforesting of denuded forest lands, and for the proper instruction relative to forestry in the schools of this state; to provide penalties for the violation of this act and for other purposes; to provide for the appointment of deputy forester by the governor; to fix the assessed valuation, for a period of from ten to thirty years, of lands which shall be planted in trees; to create a forest reserve fund and to provide for the payment of all fines, forfeitures and penalties arising under the provisions of this act into said fund."

Section 1. Be it enacted by the General Assembly of the State of Louisiana, That Act No. 113 of the session of 1904, approved July 4, 1904, be amended and re-enacted so as to read as follows:

An act to establish a department of forestry, to provide for its proper administration, to provide for the services of a state forester, to provide for the acceptance of gifts of land by the state forests, and the administration thereof; to provide for the preservation of the forests of the state and the prevention and suppression of forest fires; to provide penalties for the violation of this act, and for other purposes.

Sec. 2. Be it further enacted, etc., That there be and is hereby established a Department of Forestry, to consist of the register of the state land office, who shall be ex-officio forester, and one deputy forester, who shall be a person educated in sylviculture, and who shall be appointed and commissioned by the governor, on the recommendation of the conservation commission, for the period of one year at a time; provided, the ex-officio commissioner of forestry shall receive as compensation for the performance of duties imposed on him by this act $500.00 per annum, payable out of any funds of the state not otherwise provided for, on the warrant of the commissioner of forestry, and an expense fund of $300.00 per year for traveling and incidental expenses; the deputy forester and such assistants as may be provided, to be paid as hereinafter provided for.

Sec. 3. Be it further enacted, etc., That it shall be the duty of the state forester, provided for in section 1 of this act, under the general supervision of the conservation commission, to have direction of all forest interests and all matters pertaining to forestry within the jurisdiction of the state; take such action as is authorized by law to prevent and extinguish forest fires, and enforce all laws pertaining to forest woodlands and prosecute for any violation of such laws. He shall carry on educational work in the state in the interest of forest preservation by means of correspondence, publication and lectures, especially in the schools of the state. It shall be his duty to co-operate with private timber owners in laying plans for the protection, management

and replacement of forests and in aiding them to form protective associations. It shall be his duty to examine all timbered lands belonging to the state, and report to the conservation commission upon their timber condition and actual value, and also whether some of those lands may not be held as state forest reserves. He shall be responsible for the protection and management of lands donated to or purchased by the state, and of all other lands reserved by the state as state forests. He shall make statistics of forest conditions, or forest resources of the state, the extent for forest injuries, conduct experiments in tree planting and note the effect of forest grazing and turpentining and along other lines of forest work. He shall prepare an annual report of the progress and conditions of the state work in forestry to the conservation commission and therein recommend plans for improving the state system of forest protection, management and replacement. Whenever it shall be reported to him that any person or persons engaged in a timber business subject to license tax are operating without license, he shall cause the same to be collected according to law.

Sec. 4. Be it further enacted, etc., That the governor of the state is hereby authorized to accept gifts of land to the state to be held, protected and administered by the conservation commission as state forests, and to be used to demonstrate their practical utility for reculture and as breeding places for game. Such gifts must be absolute except for the reservation of all mineral rights, and in no case shall exceed (10) ten per cent. of the area of any parish wherein such lands may be situated. The attorney general is directed to see that all deeds to the state are properly executed and that the titles thereto are free and clear of all encumbrances before the gift is accepted. When any donation exceeding six hundred acres is made, the name of the donor, or any name he may suggest, on the approval of the conservation commission, shall be given such donation, as the designation of such reserve.

Sec. 5. Be it further enacted, etc., That any person that wilfully and negligently sets on fire or causes to be set on fire any wood, brush or grass land not his own, or sets on fire or causes to be set on fire any land belonging to himself and allows such fire to escape to any wood, brush or grass land not his own; and any person that wilfully suffers any fire set by himself to damage any property of another, is guilty of a misdemeanor, and, upon conviction, shall be punished by a fine of not less than $20.00 nor more than $300.00, or by imprisonment of not less than ten days nor more than six months, or both such fine and imprisonment. Every person that wilfully or maliciously sets on fire any such wood, brush or grass lands or causes to be set on fire any such wood, brush or grass lands, whereby the property of another is injured or destroyed, shall, upon conviction, be punished by a fine of not less than $25.00 nor more than $1,000.00 or by imprisonment for a term of not less than three months nor more than five years, or by both such fine and imprisonment. Any person who shall cause a fire in any wood, brush or grass lands by carelessly, negligently or deliberately dropping a burning match or emptying fire from a pipe, or dropping a lighted cigar or cigarette, or discharging a combustible wad from firearms, or failing to extinguish a camp fire upon leaving it, shall be deemed guilty of setting the forest on fire.

Sec. 6. Be it further enacted, etc., That nothing in this act shall be construed as affecting the right of action for damages. The liability of persons or corporations for all damages shall include the injury to young growth resulting from fires. The damage to young growth shall be calculated as the expense of artificially planting and cultivating such small growth to the point of development at the time when the fire occurred.

Sec. 7. Be it further enacted, etc., That it shall be the duty of all railroad companies operating any railroad through forest lands within this state to keep their right of way cleared of all combustible materials and safely dispose of the same within said limits of said right of way between the fifteenth day of November and fifteenth day of April. No railroad company shall permit its employees to leave a deposit of fire or live coals on its right of way other than between the rails, in the immediate vicinity of woodland or lands liable to overrun by fires, and when engineers, conductors or trainmen discover that fences or other materials along the right of way, or woodland adjacent to the railroad, are burning or in danger from fire they shall report the same promptly at the next telegraph station that they pass. In seasons of drought the railroad companies shall give particular instructions to their section foremen for the prevention and prompt extinguishment of fires originating on its right of way, and they shall cause warning placards furnished by the forest commissioner to be posted at their stations in the vicinity of the forest lands. Any railroad company wilfully violating the requirement of this act shall be deemed guilty of a misdemeanor and be punished by a fine not exceeding one hundred dollars for each offense, and railroad employees wilfully violating the requirements of this section shall be guilty of a misdemeanor and shall be punished by a fine of not less than five dollars nor more than fifty dollars. But this section shall not be construed to prohibit or prevent any railroad company from

PLATE I. EXCELLENT YOUNG STAND OF LONG-LEAF PINE, WHICH COMPRISES ALMOST ONE-HALF OF THE FORESTS OF LOUISIANA

PLATE II. TYPICAL CYPRESS SWAMP IN THE ALLUVIAL REGION BORDERING THE MISSISSIPPI RIVER IN LOUISIANA

PLATE III. IN THE CYPRESS REGION. A RIDGE TYPE FOREST COMPRISED OF SWEET GUM, WATER AND LIVE OAKS, HACKBERRY AND OTHER HARDWOODS. ALLUVIAL AND BLUFF REGION, WEST OF OF THE MISSISSIPPI RIVER IN LOUISIANA

LOUISIANA FORESTS

piling or keeping upon the right of way cross ties or other material necessary in the operation or maintenance of such railroads.

Sec. 8. Be it further enacted, etc., That in a prosecution for the wilful and negligent setting fire to forests, when the evidence has been heard on the guilt or innocence of the party or parties charged with the crime, it shall be within the discretion of the court to take evidence as to the cost of fighting the fire which the accused is charged with setting, and it shall be within the discretion of the court to assess such costs as a part of the penalty of the person or persons charged, if he shall be found guilty.

Sec. 9. Be it further enacted, etc., That there shall be appointed by the governor, upon the recommendation of the conservation commission, a person practically and theoretically educated in sylviculture, who shall be deputy state forester. His duties shall be as herein prescribed for the state forester, and he shall be the chief assistant, under the supervision of the state forester, in carrying out the forest policy of the state. He shall receive a salary of $1,800.00 per annum, and, under the supervision of the state forester, shall have an allowance not exceeding $600.00 per year for office and traveling expenses, which shall be paid by the state forester from the conservation fund, established by the law of this state.

Sec. 10. Be it further enacted, etc., That the state forest warden shall prepare notices, printed in large letters upon cloth or strong paper, calling attention to the destruction caused by fires and to the forest fire laws and the penalties for their violation. Such notices shall be distributed to all forest wardens, parish officials, railroad and lumber companies, private citizens, officers, railroad stations, in public squares, along public highways and in other places. Any person who shall maliciously or wilfully destroy, deface, remove or disfigure any sign, poster or warning notice posted under the provision of this act, shall be guilty of a misdemeanor and punishable upon conviction by a fine of not less than fifteen dollars nor more than one hundred dollars, or by imprisonment for a period of not less than ten days nor more than three months, or by both said fine and imprisonment.

Sec. 11. Be it further enacted, etc., That the consent of the state of Louisiana be and is hereby given to the acquisition by the United States by purchase or gift of such land in Louisiana, not exceeding one hundred thousand acres all told, as in the opinion of the federal government may be needed for the establishment of a national forest reserve in this region; provided, that the state shall retain a concurrent jurisdiction with the United States in and over such lands in so far that civil process in all cases and such criminal process as may issue under the authority of the state against any persons charged with a commission of any crime without or within said jurisdiction, may be executed thereon in like manner as if this act had not been passed; that power is hereby conferred on congress to pass such laws as it may deem necessary to the acquisition as herein provided for incorporation in said national forest reserve such forest covered or cut-over lands lying in Louisiana as in the opinion of the federal government may be needed; that power is hereby conferred upon congress to pass such laws and to make or provide for the making of such rules and regulations of both civil and criminal nature and provide punishment for violation thereof, as in its judgment may be necessary for the management, control and protection of such lands as may from time to time be acquired by the United States under the provisions of this act.

Sec. 12. Be it further enacted, etc., That all monies, minus the cost of prosecution, received as penalties provided for the violations of this act, shall be paid into the state treasury and placed to the credit of the conservation fund.

Sec. 13. Be it further enacted, etc., That in order to encourage the practice of forest culture in this state, when the owner or owners of any land which has been denuded of trees or any other land the assessed value of which shall not at the time of application exceed the sum of five dollars per acre, shall contract in writing with the commissioner of forestry to supervise planting and growing upon the said land suitable and useful timber trees in such manner as they shall prescribe, to protect the said land from fires, as far as practical and to maintain the trees so planted or grown upon it in a live and thrifty condition for a period of not less than thirty years and not more than forty years, and to cut or remove from said land within that time no tree or trees except as permitted in the said contract; it shall be lawful for the state board of equalizers, and the assessors of the several parishes, and they are hereby authorized upon the recommendation of the commission of forestry, to fix a valuation of $1.00 per acre upon said lands and timber, and this valuation to remain fixed and unchangeable for the period of the contract entered into by the land owner aforesaid with the commission of forestry.

Any land owner who has made such a contract with the state shall be entitled to demand an annual inspection by the Chief Forester and a certificate as to whether the contract has been carried out. At the end of the contract entered into by the land owner with the commission of forestry, or at any time within that period that the

owner or owners of said land shall fail to maintain it in all respects according to the written agreement entered into by the owner and upon which the said land was given a fixed assessment for a fixed number of years, the said land shall be restored to the assessment roll and shall be taxed the same as other similar lands, and in addition thereto the said lands shall be supplemented on the assessment rolls for an amount that would equal the assessment of the land had it not been assessed under the provisions of this act. Nothing in this act shall be construed as giving the Forestry Commission jurisdiction over lands of any resident farmer without written contract.

Sec. 14. Be it further enacted, etc., That it is hereby made unlawful for any electric lighting or power company to attach any wires or other lighting appliances to any tree along any street of any town or city in this state, and in towns and cities where such wires and lighting appliances are already attached to trees, the person, firm or corporation owning the same be and they are hereby required to remove the same within ninety days after the approval of this act. Any person, firm or corporation violating any of the provisions of this section shall be guilty of a misdemeanor, and upon conviction shall be punished by a fine of not less than twenty-five nor more than one hundred dollars for each and every offense so committed.

Sec. 15. Be it further enacted, etc., That the State Conservation Commission shall have the power to purchase lands in the name of the state suitable for forest culture and reserves at a price which shall not exceed $1.00 per acre, using for such purpose any surplus money not otherwise appropriated, which may be standing to the credit of the conservation fund; to make rules and regulations governing state reserves.

Sec. 16. Be it further enacted, etc., That the state and parish boards of public education are directed to provide for proper courses of instruction by text-books or lectures on the general subject of forestry of this state; and they are further directed to provide for the celebration by all public schools of Arbor Day, on which day, trees, flowers, etc., are to be placed, where practicable, on the grounds surrounding all public school houses.

Sec. 17. Be it further enacted, etc., That this Act shall take effect on the date of its passage and all laws in conflict herewith are hereby repealed.

The bill above quoted, which was approved July 7, 1910, is what is known as the general forestry bill. Another bill (No. 172) passed the same session refers to the establishment of the conservation commission. This commission, according to law, is to consist of eight members, three of whom are ex-officio, namely the superintendent of experiment stations of Louisiana, the state forester and the chief engineer of the state board of engineers. The other five are appointed by the governor. To this commission is given the supervision of all minerals and forests and the direction of the expenditure of the conservation fund. According to the law its duties shall be to promote and conserve the natural resources of the state. It has an appropriation of $1,800 per year for expenses.

THE REVENUE BILL

The complete text of the revenue bill which was originally framed by Mr. Foster of the Forest Service but which was greatly changed in form as it went through the legislature is given herewith. The bill has remained inoperative pending court litigation brought by the lumber interests. The final section of the bill, it will be noted, has furnished them with an excuse to hold it up on this technicality. The bill, which was approved July 6, 1910, follows:

AN ACT

To create a conservation fund by levying, collecting and enforcing payment of an annual license tax upon all persons, associations of persons, or business firms and corporations pursuing the business of severing timber and minerals from the soil; and prescribing the mode and method in which said persons subject to license tax shall make report of their business.

Section 1. Be it enacted by the General Assembly of the State of Louisiana, That there is hereby levied an anual license tax for the year 1911, and for each subsequent year, upon each person, association of persons, or business firm or corporation pursuing the business of severing from the soil timber and minerals subject to license under Article 229 of the constitution.

Sec. 2. Be it further enacted, etc., That on the second day of January, 1911, and each subsequent year, each tax collector throughout the state shall begin to collect and shall collect as fast as possible from each of the persons and corporations pursuing within his district or parish the business of severing from the soil timber and minerals, a license tax as hereinafter fixed.

The said tax collectors shall receive for collecting said license tax the same compensation as for collecting other license taxes.

All license taxes collectable under this act shall be due and collectable during the first (2) two months of each year, and all unpaid licenses shall become delinquent on the first day of March of each year, and all firms who commence business after that date shall become delinquent unless the license is paid within two months and ten days.

Sec. 3. Be it further enacted, etc., That the annual license tax for severing timber from the soil shall be fixed as follows on the gross annual cutting:

Par. 1. That for carrying on the business of cutting pine timber for saw logs, or square timber, the license shall be three-fourths of one cent per one thousand feet log scale.

Par. 2. That for carrying on the business of cutting hardwood timber, for saw logs, the license shall be three-fourths of one cent per thousand feet of log scale.

Par. 4. That for carrying on the business of cutting timber for stave bolts, the license shall be one cent per each hundred bolts.

Par. 5. That for carrying on the business of cutting timber for telephone and telegraph poles, and piling the license shall be three-tenths of one cent for each pole and piling, and one cent for each pile.

Par. 6. That for carrying on the business of extracting turpentine from standing trees the license shall be (½) one-half (½) of one cent each year for each cup or box.

Sec. 4. Be it further enacted, etc., That every mining company engaged in this state in the business of producing oil, natural gas, sulphur, or salt shall on the first day of February of each year, render to the Secretary of State a report signed and sworn to by the president and secretary, of its annual production in each parish, the total financial receipts in the sale of the annual product, and annual total quantity of the products at the mines or wells in such form as he may require. The tax collector shall demand from each company applying for a license a certificate from the Secretary of the State certifying to the total amount of the product mined in each parish during the preceding year by such company as shown by the sworn statement on file in his office, and the license shall be based upon such certificate.

Sec. 5. Be it further enacted, etc., That each and every company, person, persons, association of persons, or corporation engaged shall pay a license on such business based on the gross annual output as follows, to-wit:

Par. 1. That for the business of carrying on the mining and production of oil the license shall be (⅖) two-fifth of one cent on each barrel produced.

Par. 2. That for carrying on the business of mining and producing natural gas, the license shall be (⅕) one-fifth of one cent on each ten thousand cubic feet produced.

Par. 3. That for carrying on the business of mining sulphur, the license shall be (2) two cents for each ton mined.

Par. 4. That for carrying on the business of mining salt, the license shall be (⅕) one-fifth of one cent on each ton mined.

Sec. 6. Be it further enacted, etc., That the annual cutting of timber or production of minerals, referred to as a basis of license, are those for the year in which the license is granted: the stand and for their estimation shall be prima facie of the preceding year if the business has been conducted previously by the same party or parties, or the party or parties of whom they claim to be successors. If the firm or company be new, the amount of cutting or production for the first two months shall be considered the basis, and six times that amount shall be estimated as the annual cutting or production of such business: providing that any person or company commencing business after the first of July shall pay one-half of the above rates.

Sec. 7. Be it further enacted, etc., That the time and manner of collecting licenses under this act; the method of determining the amount of same, the form of the license receipt; the manner of filing and recording affidavits by the tax collector and rendering accounts to the auditor shall be the same as now provided or may hereafter be provided for the collection of other taxes, except as different provisions are made in this act.

Sec. 8. Be it further enacted, etc., That all monies collected on licenses under the terms of this Act shall be placed in the Treasury to the credit of the "Conservation Fund," which is hereby created.

Sec. 9. Be it further enacted, etc., That this Act shall not go into effect unless and until the proposed amendment to the Constitution of this State, amending Article 229 thereof has been adopted, which amendment is to be submitted to the people as provided by this Legislature.

EDITORIAL

OFFICIAL OBSTRUCTION

SOME of the dangers of bureaucracy in government become evident at times in Washington, although not a general characteristic of our system, in which the various bureaus and departments are, as a rule, responsive to the public will. It becomes possible at times, however, for a bureau to actually override the popular will, as expressed through congress, and a double example of this has appeared in connection with the Appalachian forest legislation.

It was the obvious intention of the House when it passed the Weeks bill in 1910 to appropriate $11,000,000 for the purchase of land on the watersheds of navigable rivers in the Southern Appalachian and White Mountains. Every step in the debate shows this. The appropriation was distributed over a term of years in order not to make too heavy a draft on any one year's revenue; yet the controller of the treasury, by a decision which takes no account of evident legislative intention, cuts off practically between two and three million dollars of this amount which it is impossible to expend before certain dates. With regard to the one million for 1910 carried by the House bill which was held up in the Senate until 1911, there is some justification for the controller's decision, although the grounds for it are technical, the intent of the bill being plain. But the remaining annual appropriations should have been regarded as continuous. Otherwise, the controller's decision does the country an injury and practically nullifies an act of Congress in this respect, for if the law is beneficial, and Congress decided that by enacting the law, a decision impairing its action impairs a national benefit. On the other hand, if the administration of the law were not in conscientious hands, the decision might lead to hasty and unwise expenditure in order to secure the full appropriation.

Such unlimited power to modify legislation cannot safely be lodged in any one man. If Congress is looking for usurpation of the legislative function, it need not cast its eyes upon the Supreme Court or the President. Here is a subordinate treasury officer who exercises legislative functions.

When the Weeks bill was passed it introduced the Geological Survey as a competent, scientific bureau to act in an advisory capacity in the purchase of land under the act. The plain purpose of the bill was to purchase forest land on the watersheds of navigable streams to the amount of eleven million dollars in five years. It was perfectly well known that the White Mountains of New Hampshire and the Southern Appalachians were the watersheds for securing which the bill was drawn. It became known soon after the passage of the act that the Geological Survey would be very slow and cautious in carrying out its part under the law. The position of the Geological Survey was made clear in a statement of its director given to the press and published last month in this magazine. It is perfectly evident that the exhaustive scientific inquiry therein indicated could not successfully be carried out within the term set for the operation of the law. It cannot be said that the Geological Survey is going beyond the powers conferred upon it by the bill if it chooses to read only the letter of the law and overlook the intent, which was to accomplish results along the proposed lines with sufficient promptness

to avert severe public losses. But thus far the Geological Survey has done practically nothing to meet the plain obligation resting upon it even under its own interpretation.

It is probable that when the law was passed it was supposed that the Survey had at its disposal the necessary information regarding the physiography of these two well-known regions, and that it had experts who could determine by a simple survey with sufficient correctness for all practical purposes the questions involved in so far as the Survey is called upon to determine anything. It is certainly not for the Geological Survey to say what constitutes a navigable river, or on what rivers the watersheds should be taken. The sole question is, will the protection of the watershed indicated by the Secretary of Agriculture affect the navigability of the stream, assuming it to be navigable?

Yet it is possible for the controller of the treasury and the Geological Survey to practically nullify an act of Congress simply by obstruction.

IS FORESTRY PRACTICAL?

IN AN address on practical forestry before the National Lumber Manufacturers' Association, Dr. C. A. Schenck disclaimed knowledge of the exact meaning of practical forestry, even after twenty years' experience as a professional forester. If so able an authority will pardon the criticism, this seems to us to have been an unfortunate admission, although the turn of the phrase doubtless pleased many of the lumbermen present and ingratiated the speaker with a part of his audience.

From our point of view the expressions "practical forestry" and "theoretical forestry" involve an essential fallacy. Forestry, rightly considered, is, in its very nature, a practical or applied science and needs no qualifying adjective. It is in the last analysis the application of scientific principles to the cultivation and management of trees and land. There cannot be any theoretical or unpractical side to real forestry. Probably Dr. Schenck would be prompt to assert this, as his mind is eminently practical. Nevertheless, his remark in opening the address referred to, gave an opportunity for some of the lumber trade journals which, notwithstanding a growing sympathy with forestry, still like to find weak spots in the forester's armor.

There may be unpractical carrying out of forestry teachings, but forestry in its fundamental principles cannot be otherwise than practical; nor are its misapplications either so numerous or so harmful as the wasteful practices of a very large number of lumbermen, which are unpractical even from the crude standpoint of dollars and cents returned. What does it mean when the claim is continually made by individual lumbermen and by lumber journals that their business is conducted at a loss, that the only money made in it is by speculation in timberlands? If that is true, lumbermen as a whole are a most unpractical class.

But is it true? Is it not a fact that those who are conducting their business along systematic lines, who are following more or less the principles of what is coming to be known as scientific business management, are making profits, and that the reckless and wasteful operators are losing? From the standpoint of profits, then, lumbering is no more practical than forestry. It all depends on how it is carried on.

However, this *tu quoque* method of debate would be extremely unprofitable if it did not lead to some conclusion tending to harmonize the difference.

The fact is simply that forestry and lumbering are entirely practical if rightly handled. They have sought different ends, but these ends must be

harmonized for the future good of society. Forestry must be practiced in this country or there will soon be no lumber industry worth mentioning, and the ablest lumbermen see this and acknowledge it. It is a repetition of a well-worn illustration to say that the idea in the past of the lumberman has been to turn the forest into money as the miner turns the product of the mine; a plan which worked well in early days of sparse population and great virgin forests. The idea of the forester is permanent cultivation, forest farming, and this is every year more necessary as population leaps forward and the original virgin forest supply diminishes. The lumberman must turn to the forester for help. The lumbermen of the future will be foresters. The difficulty now is that lumbering is still in the hands of men of the old idea, men with fixed business habits, enterprising, seeking large and quick returns, and willing to expend enormous energy to obtain them. They can be satisfied with nothing less. But the great and quick profits of the old days of lumbering accessible virgin forests are gone with the forests. To these men the methods of forestry are unpractical. It is necessary for them to readjust their view and to recognize forests as a resource in the perpetuation and permanent productiveness of which the whole people have an interest that must dominate any private interest.

Then again the markets are not adjusted yet to new conditions. We are the most extravagant users of lumber in the world and we chafe at increased prices. The consumer has a duty in this matter of adjustment that is quite as serious as that of the forester and the lumberman. The general application of forestry will not cheapen lumber products. It will steady the market, but scientific production and intensive cultivation always cost something, and those who look for a return to former low prices of forest products as a result of forestry are doomed to disappointment. The saving must be made through more careful and economical use. Our consumption per capita is the highest of any nation of the world. The consumer must learn to pay the price for good stock and make his saving by more care and restraint in use.

Practical? There is no theory about it at all. It is everyday economics based on cold facts. If forestry ever occupied the realm of theory the advanced practice of other nations has removed it therefrom.

NATION AND STATE—AND ASSOCIATION

IN THE course of recent correspondence in which a writer expressed dissent from the principles of the American Forestry Association, an inquiry as to the reason for this dissent brought out the statement that "the American Forestry Association stands for federal control, whereas we all in this part of the country believe in state control of all natural resources."

To the readers of this magazine it is not necessary to point out the error involved in this statement. It arises from a misconception, both of the attitude of the Association and of the issue involved in the control of natural resources. On the first of these points proof is easy. The attitude of the American Forestry Association has had official expression in resolutions adopted each year at the annual meetings, and especially in the admirable statement of the current year. To say that the American Forestry Association stands for federal control is both true and untrue. The preamble to the resolutions of 1911 states its position very clearly:

"Whereas the American Forestry Association stands distinctly for the agencies, national, state, municipal and private which are working for conservation and perpetual renewal of our forests;" and the fifth paragraph of

the resolution says "that the states should encourage private forestry by extending the facilities for popular information on forestry subjects, by establishing demonstration forests, and especially by improving the system of protection from forest fires and by reforming the laws on forest taxation. That they should inaugurate the policy of buying land and acquiring a perpetual forest cover and of managing such land by the state as an owner with all the rights of an owner. That they should enforce a reasonable degree of regulation on lands where the direct influence of the forest on streams and erosion is clearly proven. That they should put the interpretation of such regulation in the hands of a qualified forester with the power and with sufficient assistance to ensure full enforcement."

This is certainly a clear and explicit statement of the right and the duty of the state to act in the field of forest conservation. The Association assumes no doctrinaire position on this question. Probably among its members varying views are held as to the extent to which federal control should be excercised, but we believe its members in every state in the Union are at one in their desire to find the best solution of all the problems relating to the perpetuation of our forests.

The fact is that the line has been drawn altogether too sharply and definitely between state and federal control in the popular mind by recent discussions which have been carried on with some carlessness as to statement and definition. The general issue is one older than the Constitution, and it can never be settled simply for or against our federal system. Compromises and adjustments, however distasteful to either side, always have had to be made and always will be. It is undoubtedly true that modern means of communication have united states and communities as never before, have brought the states closer together and have nationalized many questions; but the states still remain the units of our political system and in forestry matters the American Forestry Association holds the function of the states to be of the highest value, as the resolution above quoted shows. But it is also true that the boundaries of forests and watersheds do not correspond with those of states, and one state cannot do those things that would injure its neighbor. Thus there is a legitimate field for national action for the common good, as there was when the Louisiana territory was secured by the action of the nation, which created from that territory the state from which our correspondent writes, as a part of the United States.

Furthermore, the nation possesses a great unalienated domain which it has been found necessary to protect from private exploitation in order that the people of all the states may not suffer loss for the profit of a few. Only selfishness can question such an exercise of national control; but to say that the American Forestry Association stands, without qualification or explanation, for federal control is one of those half-truths which is more injurious than a complete misstatement.

STATE FOREST LEGISLATION

THE intelligent activity of state legislatures during the last months in the field of forest legislation promises well for the early development of a nation-wide forest system in which each state will do its part. It indicates an awakened public interest that is not abstract and concerns itself with the immediate home problem. On the Pacific coast, California, Oregon and Washington have all been active during their last legislative sessions. In the middle west Minnesota has adopted a model forest code, published last month in AMERICAN FORESTRY, and has organized a forest

service on modern lines under an efficient forester. Wisconsin, which has long stood in the front rank, is working on a series of forestry measures, designed to further enlarge and strengthen the state forest service and to increase the forest property of the state. In the south, Florida has a forest law under consideration, and Louisiana, to which we give some space this month, has adopted an interesting legislative policy, some phases of which still have the gauntlet of the courts to run. In the east, the states that have already shaped forest policies are protecting them at points where weakness has been shown. New Hampshire, in particular, has formulated a very complete forest law which seems to be a model for the conditions to which it applies.

It is not surprising that in all this new legislation, protection from fire is emphasized. The fires of the last year and the active agitation of various associations and individuals, united with the self-interest of the timberland owners, have inevitably forced to the front this most obvious phase of forestry—a phase which has all the pressing urgency of general property protection.

It is equally interesting to note that another subject, confessedly of the first importance, that of forest taxation, is conspicuous by its absence from legislative action. It is a melancholy fact that in all the thousands of years in which human society has been experimenting with various forms of taxation for the support of government, no well-reasoned, scientific system has received general sanction and been put into effect. We have to acknowledge that all our systems of taxation are unscientific makeshifts. The taxation of our forests suffers especially under these conditions, because the forestry question has been so imperfectly understood, and the means of securing a public income from private forest lands that will be at once just to the public and to the private owner, has not presented itself clearly to our lawmakers. It is very difficult to secure a frank and intelligent discussion of this subject. Everybody is willing to talk about it and everyone acknowledges the importance of reaching some intelligent conclusion, but very few are willing to commit themselves definitely to any policy. The whole subject of taxation seems to have its terrors which increase with knowledge.

CURRENT LITERATURE

REVIEWS

Forest Life and Sport in India. By Saint-hill Eardley-Wilmot, C.I.E., late Inspector-General of Forests to the Government of India. Illustrated with photographs by Mabel Eardley-Wilmot. New York: Longmans, Green & Company; London: Edward Arnold. pp. xi, 234. Price, $3.50 net.

The dedication of this interesting mingling of description, personal experience, and account of Indian forest conditions and the organization of the Indian forest service, is to "Theodore Roosevelt, forester and naturalist, in admiration of his success in the conservation of the natural resources of his country," a fraternal tribute which will give the book a place in the hearts of many Americans. The author joined the Indian forest service in 1873 as a subordinate officer and continued in the service until the end of 1909, rising through the grades to the highest rank, becoming inspector-general in 1903, so that he writes with the authority born of long and intimate experience. The book is in part a personal narrative, which under the circumstances is both entertaining and instructive. The forests of India in all of their varying types are described with the keenness of a man who knows them, not from an occasional excursion or tiger hunt, but from years of residence combined with professional duties which compelled study and knowledge. The organization, methods, and problems of the forest service are also well set forth. The author's long service covered very largely the development of forestry in India and this is brought out in the narrative which opens with his early experiences in the province of Oudh, and closes with his work as inspector-general in improving the conditions of the service which he had worked with for over thirty years.

The concluding chapter contains a warning to England that she must help herself in securing the direct benefit of the forest, showing by a brief survey of conditions in the world's supply and markets that neither from India, Canada, nor other countries can an adequate supply of forest products be expected. The author's observation regarding the object of state forestry in India should be applicable elsewhere. It is, says Mr. Eardley-Wilmot, "to supply the requirements of its population in forest products, to protect the water supply of the country, and to afford help in its industrial development. As is the case in European countries the forest management should, as it always has, result in profit, but this profit should be subsidiary to the main objects in view; it should be a consequence of, and not a reason for, a forest policy."

This is a book simply written by a man who has a story of significance to tell; a book to be read by those who wish to know what the world is doing in forestry; a book that graphically describes a phase of Indian life not presented in other books. It is interesting to note the interest in forest sport, the almost affectionate regard even for the tiger developed in the man who has been their neighbor for years and matched his strength against theirs, and the thought, more than once referred to, that the disappearance of the big game would take away one of the attractions of a forester's life in India, and make it harder to recruit the service.

Shade Trees in Towns and Cities. Their selection, planting, and care as applied to the art of street decoration; their diseases and remedies; their municipal control and supervision. By William Solotaroff, B. S., Secretary and Superintendent of the Shade Tree Commission of East Orange, N. J. New York: John Wiley & Sons, 1911. pp. xviii, 287. *Price, $3 net*

In reviewing Dr. B. E. Fernow's excellent book on "The Care of Trees" in June, 1910, the remark was made that it filled a long-felt want. Mr. Solotaroff's volume now comes to meet the same need. Dr. Fernow found this work called for as an addendum to his long experience in forestry work; the New Jersey specialist writes from his own intimate study and experience with the care and management of public shade trees. These two books, together with a handsome pamphlet by Colonel William T. Fox, the late superintendent of state forests of New York, and a bulletin published several years ago jointly by the Massachusetts Agricultural Experiment Station and the Massachusetts Forestry Association form, so far as we know, the whole comprehensive literature of the subject. There are, of course, numerous studies of certain phases of it, such

as tree surgery and insect pests. The present volume is a welcome addition to the brief list and should have a wide sale. It is sane, careful, concise, and complete. The opening chapter discusses trees in the life of a city and is followed by chapters on selection of trees for street use; species for street planting; the planting of street trees; the care of street trees; injuries to shade trees and how to protect them; injurious insects, fungous and other diseases; insecticides, fungicides, and spraying; the repair and replacing of trees; who shall plant and care for street trees; a department of municipal arboriculture; and legislation.

Mr. Solotaroff joins Dr. Fernow in a protest against the use of the term "city forester," preferring that of "tree warden." The present reviewer made the same protest years ago against the use of this misnomer. It is something more than a mere question of name. It gives a wrong idea and should be avoided.

The illustrations in this book have been carefully made and selected. They are admirable and tell a great deal of the story well. For the rest it may be said that there seems to be nothing omitted that is really essential, and nothing included that is unnecessary. It is a good thing to be able to say this in these days of many books. If this manual, or Dr. Fernow's, or better both of them are thoroughly studied by those who have in charge the shade trees of our towns and cities, a great improvement in conditions should be attained in a few years. Not those in actual charge of the trees only, but all of those citizens who wish to know the standards to be worked for and the conditions of attaining them, can study such books with profit.

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American forestry, June, 1911.—A national capital forest, by W. M. Ellicott, p. 317-25; A report on the Washington forest, by F. W. Besley, p. 325-6; Handling the fire peril, by E. T. Allen, p. 329-32; Insects injurious to forest trees, p. 335-43; Bamboo pulp as the paper material of the future, by H. Vincent, p. 343-7.

Bulletin de la Société centrale forestière de Belgique, April, 1911.—Incendies de forêts; causes, dégats, remèdes, p. 229-40; L'ameublissement du sol dans les futaies de hêtre, by Huberty, p. 241-51; Commerce d'importation et d'exportation des bois en 1909, p. 252-60; La rusticité du Douglas, by D. Cannon and others, p. 260-70.

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Canadian forestry journal, March-April, 1911.—The forest ranger, by S. J. Record, p. 30-4; The Riding Mt. forest reserve, by George King, p. 35-6, 56; A long fight ended; forest reserves in Appalachian and White Mts. now assured, p. 41-3; One means of fire detection; one of Maine's lookout stations, p. 44; La pépinière de Berthierville, P. Q., by A. Bédard, p. 45-6. The great Miramichi fire, p. 49-51; Making maple sugar, p. 52-3.

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Indian forester, Mar.-April, 1911.—The influence of forests on rainfall and floods, p. 119-30; The forestry court of the U. P. exhibition held at Allahabad, 1910-1911, p. 131-60; Tanning extracts, p. 160-71; Paper-pulp testing at the forestry court cellulose laboratory, Allahabad exhibition, by W. Raitt, p. 171-8; Mechanical road transport of timber, p. 180-3; Notes on some F. M. S. timbers, by H. N. Ridley, p. 223-7; Timber resources of the world, p. 228-34.

Revue des eaux et forêts, April 15, 1911.—Le blanc du chêne, by M. Mangin, p. 225-39.

Revue des eaux et forêts, May 1, 1911.—Estimations et exploitabilités forestières, by P. Bizot de Fonteny, p. 257-67; L'Oidium du chêne, p. 270-2.

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Zeitschrift für forst- und jagdwesen, April, 1911.—Die Kiefernzangenbohrer-pflanzung, by Kranold, p. 353-67; Der schüttepilz der kiefer, by Haack, p. 329-57.

Zeitschrift für forst- und jagdwesen, May, 1911.—Zum kampf gegen die nonne, by Laspeyres, p. 424-30; Zur nonnenbekämpfung in Sachsen, by Bluhm, p. 430-3; Zum nonnenkrieg in Sachsen, by Schall-Riaucour, p. 433-5.

Some Reports and Bulletins

The Biennial Report of the State Geologist of North Carolina, Dr. Joseph Hyde Pratt, is to a considerable extent a forestry report, dealing at length with the conditions in the state and work that is being done. On this point the report says that the protection and the perpetuation of the forests of North Carolina has become one of the more important problems and studies of the North Carolina Geological and Economic Survey. It is estimated that approximately eleven million acres of land in the state are now supporting some kind of forest growth and one-half of this area is probably absolutely forest land. Problems relating to forestry are vital to the industrial life of the state, which should put forth every effort to make the forests as nearly perpetual as possible and encourage and stimulate their conservation by their owners. The forestry work of the Department has consisted of: (1) An investigation of the forest conditions of North Carolina; (2) a study of forest fires in North Carolina; (3) a statistical study of the wood-using industries of North Carolina; (4) the examination of timber areas in regard to practicing scientific forestry; (5) examination of watersheds belonging to municipalities in regard to their protection from fire and contamination; (6) investigation regarding the re-forestation of

abandoned farm lands and cut-over lands. This work was conducted by W. W. Ashe until May, 1909, since which time J. S. Holmes, formerly of the United States Forest Service, has been the forester of the state.

The latest issues in the series of studies of wood using industries in the several states cover Kentucky and Oregon. The former is by Roger E. Simmons, statistician of the Forest Service, and is published under the direction of M. C. Rankin, chairman of the state board of agriculture, forestry, and immigration, and commissioner of agriculture, labor, and statistics of the Commonwealth of Kentucky, and H. S. Sackett, chief of the office of wood utilization of the United States Forest Service. The latter is by Howard B. Oakleay of the Forest Service, published under the direction of A. B. Wastell, secretary of the Oregon Conservation Association, and J. B. Knapp of the Forest Service. They are done on the lines of similar studies of other states that have been already noticed in these pages. Both states are of great interest in this connection.

Museum Bulletin 147 of the New York State Museum, issued as Education Department Bulletin No. 490, is the twenty-sixth report of the state entomologist on injurious and other insects of the state of New York and is of interest to tree growers as well as horticulturists. There are a few pages on forest tree insects, including the large black carpenter ant, Abbott's pine sawfly, the spotted cornus sawfly, the blue cornus sawfly, the spotted pine weevil, the snow-white linden moth, the birth leaf skeletonizer, beech tree blight, and silver fir aphid.

The annual report of the State Board of Forestry of Indiana is a survey the experimental and educational work which is going on in the state. Indiana is having the experience of all of our states and there is proceeding there a slow and patient development of public sentiment. The biennial reports of the state foresters of California and Wisconsin, two states where forestry has already arrived, have also appeared and contain much matter of interest to the student of state forestry, which should mean every American citizen. Another annual report is that of the commissioner of forestry of Rhode Island, and this is largely a practical essay on the management of woodlands by the commissioner, Jesse B. Mowry.

The Forest Club Annual of the University of Nebraska for 1911 is an interesting pamphlet of 119 pages containing numerous articles, many of them illustrated, of more than local interest.

The Biennial Report of the Board of Commissioners of Agriculture and Forestry of Hawaii, for the period ending December 31, 1910, has been received. This report contains 80 pages devoted to the division of forestry and embraces the whole field of forestry, as the territorial forest service, under Mr. Hosmer, is active in all directions. Our continental foresters will envy a department which is able to say that the territory has not had any forest fires of sufficient importance to justify more than passing mention.

The annual Report of the Director of Forestry of the Philippine Islands for the year ending June 30, 1910, is a compact summary of the work of the department, the peculiar problems of which have been discussed in recent articles in AMERICAN FORESTRY.

NATIONAL FOREST WORK

Grazing and Fires in National Forests.

In reply to a letter signed Helena, Montana, published in the *New York Evening Post* of the 25th of May, and full of the usual inaccuracies and threadbare misstatements made so familiar to us through the oratory of Senator Heyburn, Mr. Graves, the Forester, made the following reply, which was published Monday, the 12th of June, 1911.

To the Editor of the Evening Post:

Sir: A letter under the heading "The Cause of Forest Fires," has just come to my attention. Since it was written by a man who speaks as one familiar with western conditions and without bias of personal interest, I fear that readers who are not informed concerning national forest matters may be led to form wrong conclusions. The natural inference from the letter would be that under the present system of national forest administration the annual growth of grass is not utilized, but is allowed to accumulate year after year until its presence, dry and inflammable, becomes the real cause of forest fires.

The letter asks "Why did not these terrible fires occur before the government's preservation system was introduced?" As a matter of fact, they did. The forests themselves furnish conclusive proof, in enormous old burns, that fires quite as terrible as any of recent years were common before the national forests were created. The answer of your correspondent to his own question is, "Because the grass was mostly eaten and not stored up year after year to be used as kindling by some stray spark or burning match," and he speaks of the "persistence" of the government "in storing inconceivably large quantities of dry grass in close proximity to timber." But under national forest administration the annual forage crop is not stored. Last year permits were issued for the grazing of nearly one and one-half million cattle and horses and over seven and one-half million sheep on the national forests.

The Forest Service not only allows grazing, up to the limit set by the necessity of protecting the range itself, the young forest growth, and the flow of streams against the evils of overgrazing; it also seeks to develop the use by stockmen of range which is now unused because of inaccessibility. It recognizes the value of regulated grazing as a means of fire protection. Instead of closing the forests against stock, as your correspondent's letter would lead one to believe, the Forest Service has steadily and energetically sought to discover methods by which the amount of forage annually produced may be increased, making possible a corresponding increase in the number of stock on the forests. On understocked ranges every effort has been made to increase the number of stock. To open up new ranges roads and trails have been built and favorable freight rates have been sought from railroads. Studies have been made and experiments conducted to learn how the waste of forage due to trampling may be reduced. Reseeding investigations have been made. In short, every effort has been put forth to bring about the fullest use of the range resource consistent with the preservation of this and the forest and water resources.

Opposition to regulated grazing is due as a rule not to restrictions upon the amount of stock allowed, but to the fact that those who use the national forest ranges are not allowed free use, but must pay a moderate charge for the privilege: and to the further fact that as demand for use of the range increases the number of stock which any one man may graze is cut down. The grazing charge is fixed at a rate decidedly below the value of the privilege. As new men enter the business, room is made for them. This is done in order to encourage the settlement and development of the country. Those whose allotments are reduced are, naturally, loath to give way to the newcomers.

HENRY S. GRAVES,
Forester.

Washington, D. C., June 9.

"Care With Fire" Rules

According to a press report of the 5th of June, the California fire season has already begun. Two fires, due to incendiarism, in Siskiyou County and in Tulare County have been reported. The protection force, which has been greatly increased, has controlled them both and found the person who was responsible for the fire in each case. Incendiarism is usually due to inflammatory oratory in Washington, but for the simple camper or traveller without wicked intent, the District Forester at

San Francisco has drawn up a set of simple rules. If travellers in the mountains would but observe these rules, the fire record would be less than half as bad as last year, *For sixty-three of the worse forest fires last year were started by hunters and campers.* The "Care with Fire" Rules are as follows:

1. Be sure your match is out before you throw it away.
2. Knock out your pipe ashes or throw your cigar or cigarette stump where there is nothing to catch fire.
3. Don't build a camp fire any larger than is absolutely necessary. Never leave it, even for a short time, without putting it out with water or dirt.
4. Don't build a camp fire against a tree or a log. Build a small one where you can scrape away the needles, leaves or grass from all sides of it.
5. Don't build bonfires. The wind may come up at any time and start a fire you cannot control.
6. If you discover a fire, get word of it to the nearest U. S. Forest Ranger or State Fire Warden just as quickly as you possibly can.

The Wallowa Forest Divided.

For purposes of administration, President Taft has signed a proclamation effective July 1st, establishing the Minan National Forest, Oregon, which has been a part of the Wallowa Forest. The division was made to permit a more efficient fire patrol.

Troops Cannot Be Assigned For Fire Protection.

A resolution has recently passed the California Legislature requesting of Secretary of War Stimson detachments from the regular army, to be stationed in California Forest Reserves during the three fire months, July, August and September, for prevention in fighting forest fires. Secretary Stimson has refused the request, saying that other states would probably ask of him the same privilege, and stating that too many troops would thus be required. The troops may, however, be called out in case of emergency.

The Florida National Forests.

Plans are being laid in the office of Supervisor Eldridge, at Pensacola, Fla., for the improvement of the two national forests in Florida, the Choctawhatchee and the Ocala. These improvements, which will be begun when the apportionment of the fund for District 3 has been made, consist of the building of several ranger stations, barns, wharfs and some sixty-seven miles of telephone lines, which will be constructed through the Choctawhatchee Forest this summer.

Appropriation Allotment for District 4.

The officers in charge of District 4, of the United States Forest Service, with headquarters at Ogden, Utah, have received news from the Washington office that during the fiscal year beginning July 1, 1911, they have an increase of $70,720 over the allotment of any previous year. The amount for the district for the coming year is $907,210. Of this the following sums are available for the purposes named:

For supply depot and office of property auditor.....	$168,320.00
For general administration of District 4.....	738,890.00
(Of this) For the District office	73,590.00
For the administration and protection of thirty national forests is District 4.....	665,300.00
(Of this) For permanent improvements	75,000.00
For forest nurseries.....	34,000.00
For extraordinary emergencies in fighting fire.....	10,000.00
For fire patrol.....	13,297.00

With the liberal provisions made for the protection of the forests, an additional appropriation for the Agricultural Department during the coming fiscal year, a special emergency fund of $1,000,000 is to be available for fire protection. No allotment of this amount is made to each district, but it will be used as conditions demand and circumstances warrant. The officers in charge feel confident that with such forehanded provision the fire disasters of last year will not be repeated.

STATE WORK

Florida.

A bill introduced by Senator Williams, in the Florida legislature, which is intended to promote conservation of the forests of Florida along the line of the national laws, provides for the establishment of a state forest commission and the conservation of forest resources of the state.

The bill provides for the commission consisting of the governor, the commissioner of agriculture, the director of the state experiment station, the attorney general and the state geologist, which commission shall act without compensation, but shall be reimbursed for actual necessary expenses. It provides also that a state forester shall be appointed by the forest commission who shall be designated fish, game and forest commissioner, and who must be technically trained. He shall have the direction of all matters pertaining to forestry; have charge of all forest wardens; enforce all laws pertaining to forests and woodland and prosecute for any violation thereof; collect data relative to forest destruction and forest conditions; deliver annually a course of lectures at the University of the State of Florida upon forestry and silviculture; carry on an educational course of lectures on forestry at the farmers' institute, act as secretary to the forest commission and prepare an annual report with plans for improving the state system of forest protection, management and replacement.

The state forest commission shall, by this bill, have the power to purchase, in the name of the state, lands suitable for state reserves at a price which shall not exceed one dollar per acre for cut over land and two dollars per acre for any other land.

The governor of the state is authorized to accept gifts of land and the attorney general is directed to inspect the deeds.

If, for any cause, lands revert to the state, the title of these lands shall be permanently vested in the state after a period of two years and shall become, if suitable, a forest reserve.

Strict penalties are in force against every individual or corporation which carelessly, negligently, wilfully, or maliciously sets fires.

Logging and railroad locomotives, donkey or threshing engines, operating in, through, or near a forest, which do not burn oil, shall be provided with appliances to prevent the escape of fire and sparks.

Upon examination by the commissioner and recommendation of the state commission, state lands suitable for forest growth can be maintained permanently as such.

Pine trees under ten inches in diameter cannot be boxed one foot above the ground. Railroad ties must be cut from trees which are fourteen inches in diameter or more. Cedars cannot be cut less than eight inches in diameter, six inches above the ground.

The forest commission is authorized to regulate the sizes of green timber in the different portions of the state.

The "forest fund" shall be created by a ten-cent stamp which must be affixed to all naval stores.

Manufacturers of lumber must once a month make a sworn statement to the collector of revenues of every thousand feet manufactured and pay to the collector three cents for every thousand feet, the money to be added to the "forest fund" named above.

An appropriation of four thousand dollars annually for each of the fiscal years 1911 and 1912 is made for carrying out the provisions of this act.

Massachusetts

Governor Foss has recently (June 10, 1911) proposed an amendment to the state constitution in regard to taxation, one portion of which is of interest to the readers of AMERICAN FORESTRY. This amendment gives to the general court full power "to prescribe for wild or forest lands such methods of taxation as will develop and conserve the forest resources of the commonwealth." At a hearing on this proposition, Henry James, Jr., spoke for the Massachusetts Forestry Association, and urged the adoption of the amendment which, he said, would give relief to the owners of forest lands during the long growth of new timber when the burden of the present tax is too great for the small owner to bear. Mr. James quoted from the report of the state forester that there are three million acres of waste land in Massachusetts which ought to be covered with forests. Following the plan of Europe these forests should yield a revenue of upwards of $2.50 an acre, thus a revenue of $7,500,000 upward would accrue to the state and, Mr. James went on to point out, re-

forestation on such a scale would mean an increase in the water powers of the state of from 100,000 to 300,000 horsepower, another element of profit. Growing timber should be taxed no more than growing corn. The tax should be on the tree when cut, was the substance of the contention. Mr. D. Blakely Hoar, speaking for the Chamber of Commerce, buttressed Mr. James's argument.

New Hampshire.

Early in June the forestry commission of the state met to receive the report of the state forester on the forest fire protection work, started this spring, and to consider plans of future action. The state forester reported that from the 19th of April to the 9th of June, 1911, twelve thousand acres in New Hampshire were burned over. This all happened in the southern part of the state, where celebration of the Massachusetts holiday, the 19th of April, started the conflagration. Ever since that date fire patrol has been maintained and on Sundays the force has been doubled. Each patrolman has put out incipient fires and warned a great number of people, and yet he seems unable to cope with the lawless spirit of the holiday season.

A tract of land of 210 acres in the town of Warner has been given to the state of New Hampshire for a state forest as a memorial to Walter Harriman, governor of the state from 1867 to 1869. The donor is Joseph R. Leeson of Newton, Massachusetts, a son-in-law of Governor Harriman. The land lies on the south slope of Stewart Mink Hill, near the birthplace of Governor Harriman. Stewart Mink, the southern extension of the Mink Hills, is over 1800 feet high, and commands a view of the entire country from the White Mountains on the north to Monadnock on the south.

The reservation will be under the care of the forestry commission and will be used as a demonstration forest. It contains a small area of old growth spruce near the top of the hill and lower down a mixture of spruce, maple, beech and birch, which gradually emerges into a thrifty stand of pure hardwoods containing a large percentage of red oak. The open land is seeding rapidly to spruce and pine. It is proposed to carry on experimental cuttings to improve the present stands of timber and to plant a variety of species on the open land.

In giving this land to the state, Mr. Leeson expressed the hope that it may lead to the acquisition of other tracts, on which the principles of forestry may be demonstrated.

It is much to be desired that the announced name—Walter Harriman Reservation—should substitute the term State Forest for Reservation. The latter term is a misnomer and is always obnoxious, as was determined in the case of the national forests. State forest, on the other hand, conveys the dignified idea, not of something set apart, but of a useful public domain.

A New York Appointment.

William Gibbs Howard, a graduate of the Harvard Forest School of 1908, has been appointed assistant superintendent of forests of the state of New York. In addition to forestry work in New England, Mr. Howard has had practical experience in the work of the United States Forest Service in the west. He has also a working familiarity with the New York forestry problems gained by nearly two years' work as forester in the Adirondack forest reserve. He has been stationed at Albany for two years.

Washington.

A new forest fire law became effective in the state of Washington early in June, a law so drastic in its provisions that complaint has been made that some of the logging companies may be driven out of business. The new law ranks among the three or four best in the United States except in the matter of appropriation.

For the most part the law represents the conclusions of the commission appointed by Governor Hay. One of the principal changes made in the law was a reduction of the appropriation asked for. The state has now only $76,000 available for the next two years, although undoubtedly more will be forthcoming if this amount is wisely spent. The following are some of the provisions of the law: The operation of donkey engines is prohibited; logging locomotives must be watched by track patrol; mill waste cannot be burned unless confined; when rights of way are cut for railroads or wagon roads, all the debris must be burned; snags and dead trees shall be cut and disposed of before a slashing fire is set.

These are some of the provisions of the new law which it is said will drive the lumbermen out of business, but the state of Washington had a bad scare last summer when the extensive forests of the western part of the state were threatened. And the legislature, at the instigation of the governor, has come to the belief that forest fires and not preventive measures will drive the lumbermen out of business.

Wisconsin.

Wisconsin has become the synonym for progressive legislation and the three new bills on the subject of conservation which represent the labors of the special joint committee seem to warrant this reputation. The legislature has recently voted:

1. An appropriation of $250,000 a year for ten years for the purchase of intervening forest land in order to bring the present reserve of 385,000 acres up to 2,000,000 acres.

2. A county fire warden system for the northernmost twenty counties of the state, to be paid for out of a fund of about $250,000 to be raised by special tax of two cents per acre on all lands to be benefited by the system.

3. A public domain commission to take the place of the present state board of forestry and the fish and game warden department; the state forester as superintendent of the public domain commission to have charge of the bureau of forestry and the bureau of fish and game; the commission to be constituted as is the present forestry board, namely, the president of the state university, director of the state geological survey, dean of the agricultural college of the state university, the attorney general and one member at large, named by the governor to serve without pay.

The original recommendation of the forestry committee was that of a 2-10 mill tax to be levied on all property in Wisconsin in order to provide a fund of $600,000 to take care of both the purchase of additional forest reserve land and of the proposed county fire warden system. As arranged in the new bills the forest reserve appropriation is directly from the general fund, but within a few years the lands of the state forest reserve (it is estimated) will be bringing into the treasury of Wisconsin at least two million dollars from the wood-using industries of Wisconsin.

EDUCATION

Colorado College

The Colorado School of Forestry of Colorado College has had a successful year, with an enrollment of thirty-six students in its undergraduate course. A two-year course, leading to Degree of Master of Forestry, open to persons who have already received a Degree, is advertised in the recent Announcement.

The Ranger course which was given last year in coöperation with the Forest Service, until the decision of the attorney general made its discontinuance necessary, will probably be given in the fall by the faculty of the School alone.

The School has been in charge of Prof. P. T. Coolidge, as Director. Mr. E. I. Terry, a graduate of the Harvard School of Forestry, who has had several years' experience in the Forest Service on the national forests, was appointed as an Instructor in Forestry in January.

In accordance with a working plan prepared by the Senior class last spring, conservative lumbering has been in active progress during the last year at Manitou Park, the 10,000-acre tract of yellow pine owned by the School. The results of these operations are the removal of considerable over-mature timber and the creation of available funds for the expense of instruction in the School.

New Hampshire State College.

J. H. Foster, Assistant Chief of State Cooperation, United States Forest Service, leaves the Service September 1 to take charge of the new department of forestry in New Hampshire State College, provided for by the new forest legislation of this year. Mr. Foster has had a wide experience and is well known through the published results of his studies of forest taxation in New Hampshire and Louisiana.

Biltmore Forest School.

The Biltmore students studied practical forestry in the Atlantic coast pineries, as the guests of the John L. Roper Lumber Company, from May 1 to 10. Then five days were spent in Asheville and Biltmore, after which the school went to Canton, North Carolina, which will be the address of the school until July 15. From that date until August 7 it will be Cadillac, Michigan, and from that until September 27, Marshfield, Oregon.

THE LUMBER INDUSTRY.

The National Lumber Manufacturers' Association.

The ninth annual convention of the National Lumber Manufacturers' Association was held on the 24th and the 25th of May, 1911, in Chicago, with President Hines in the chair Addresses were made by lumbermen and one by a forester. The elections resulted in Major E. G. Griggs, of Tacoma, Washington, as president, and upon authority of the resolution of the Association, he has moved the manager's office to Tacoma, Washington. The secretary's office remains as before in St. Louis. The following officers were elected: President, E. G. Griggs, Tacoma, Wash.; vice-presidents, R. H. Vansant, Ashland, Ky.; J. D. Conrad, Glenwood, Fla.; R. H. Downman, New Orleans, La.; treasurer, J. A. Freeman, St. Louis, Mo.; secretary, Geo. K. Smith, St. Louis, Mo.; manager, Leonard Bronson, Chicago, Ill.

Resolutions were adopted opposing further reduction of Schedule D (lumber) of the present tariff law; endorsing "Aldrich measure" for national monetary commission; urging adoption and passage of either the Mann bill or the Fordney bill for a merchant marine made necessary by the opening of the Panama Canal; and supporting federal investigation of the fire waste (Joint Resolution H. J. 97), introduced by Congressman Jackson, of Kansas.

An address was made by R. A. Long, an ex-president of the association, and by the retiring president, Edward Hines. Also a report by Leonard Bronson, manager. There followed an address, informal and fragmentary in its nature, by J. A. Freeman, on "European Forestry"; by James A. Emery on "Working Men's Compensation"; by W. B. Townsend, on "The Hardwood Situation"; and also (upon the request of President Hines), "Practical Forestry as it Relates to Hardwood"; Harrington Emerson, on "Principles of Efficiency as Applied to the Lumber Industry"; J. H. Bloedell, on "The Panama Canal—Its Relation to the Lumber Industry of the Pacific Coast"; Robert Fullerton, "Popular Ignorance of the Lumber Industry"; W. E. Gilchrist, "Advertising Lumber vs. Its Substitutes"; A. T. Garrins on "Advertising." There was one address by a forester, Dr. C. A. Schenck, on "Practical Forestry." H. S. Graves, United States Forester, was to have spoken, but was not able to attend the meeting.

The Yellow Pine Manufacturers' Association.

Immediately preceding the National Lumber Manufacturers' Association meeting in Chicago, the Yellow Pine Manufacturers held their meeting in the same city the 23rd of May. President Thompson in his address referred to recent history, to the suits brought before a special federal grand jury and Judge K. M. Landis by the Department of Justice for the purpose of investigating the lumber business in the west in the light of the Sherman anti-trust law; to the testimony taken by Commissioner Robert M. Reynolds, representing the state supreme court of Missouri in the ouster proceedings brought by the attorney general of Missouri against forty-three yellow pine lumbermen; and to the articles upon the "lumber trust" appearing in various magazines and newspapers.

R. A. Long spoke on "An Advertising Campaign for Wooden Paving Blocks" and Charles Keith on "The Labor Situation in the South." It was Mr. Keith's speech in behalf of reciprocity and especially for free lumber that raised a storm of protest from the association. Mr. Keith maintained that the $1.35 duty on lumber did not protect, for this duty and the fight necessary to maintain it had intensified the belief in the minds of the public that there was a "lumber trust." He favored a resolution to be sent to Congress that would show that the Association was not fighting for the tariff on lumber. In this he was supported by C. M. McDoris.

W. B. Stillwell strenuously opposed the idea of such a resolution, for, he maintained, such action on the part of the Yellow Pine Manufacturers' Association would acknowledge that lumbermen had been wrong in the past. For the agitation for reciprocity Mr. Stillwell blamed certain powerful organizations that wanted free wood-pulp. Others discussed the question, but it was dismissed without action.

American Lumber Trades Congress.

The third meeting of the congress was held in St. Louis on the 23rd of May. The object for which the congress meets is to put before lumbermen a code of trade ethics for the manufacturer, the wholesaler, the retailer and the consumer, to provide for the settlement of disagreements not covered in a purchase contract.

It is the principle of the "square deal," but in the words of its president, it is described as "the square way to treat a man."

There was much discussion as to the antagonism of the press towards the lumber industry and the reasons therefor. The American Lumber Trades Congress, in its plans for future activities has constituted itself a bureau of information for the lumber industry.

The Interstate Commerce Commission.

Two recent decisions of the Interstate Commerce Commission affect vitally the lumber industry. The first suspends until the 21st of September the tariffs of transcontinental railroads from Missouri River points to the Pacific Coast, which proposed to advance rates on staves and heading.

The second denied an application filed by the Vicksburg, Shreveport and Pacific Railway for a rehearing in the matter of suspending lumber rate tariffs. According to the lumber journals, this is what happened. Some time ago the Commission refused to suspend these tariffs. The lumber interests asked for a rehearing. Meanwhile the tariffs went into effect. Now, the Commission, through Commissioner Meyer, says that it has no power to suspend tariffs already in effect, and thus the case rests.

NEWS AND NOTES

The Forestry Meeting at Bretton Woods.

The Society for the Protection of New Hampshire Forests makes further announcement of the forest conference to be held at Bretton Woods and the Crawford House in the White Mountains on the 2nd and 3rd of August, in connection with the tenth annual meeting of the Society. At the request of the state forestry commission and of the society, the Governor and Council of New Hampshire have invited the National Forest Reservation Commission to meet at the same time and place. The state forestry commission and the fire wardens of New Hampshire will hold meetings in connection with the conference

The state foresters of New England and neighboring states have been invited, and the Hon. John W. Weeks, the author of the Weeks bill, and other members of Congress have indicated their expectation to be present.

Headquarters and meetings will be at the Mount Pleasant House, which makes a special rate of $3.50 per day. Some of the sessions will be held at the Crawford House, which makes the same rate. The Mount Washington Hotel makes a special rate to members of the Society of $4.50 per day.

On the afternoon of August 1st there will be a trip to the top of Mt. Willard, overlooking Crawford Notch, and on the morning of August 2nd there will be an excursion through the Crawford Notch.

A cordial invitation to this conference is extended to all who are interested.

The Calaveras Trees.

There is a general impression that the national government has purchased the Big Trees of Calaveras, a matter which was agitated vigorously some years ago. As a matter of fact, the law which was passed at that time and which has been very little understood, was unworkable, and nothing has yet been accomplished. The law provided for an exchange with the owner of the Big Trees of unreserved government land on a basis of acreage value. The question has been taken up within a few days in Washington. Judge Raker, the representative from the Calaveras district, who has taken a great interest in the preservation of the Big Trees, arranged a conference between Robert Whiteside, of Duluth, the owner, Chief Forester Graves and Secretary Fisher. Mr. Whiteside is willing to make any reasonable arrangement with the government which will secure him the value of his property, and plans are under consideration for the proposal of new legislation which will be satisfactory to Mr. Whiteside and under which it will be possible to bring the Big Trees into government ownership—a consummation which everyone must regard as most desirable, for these trees are one of the most important historic monuments of the country.

Uniform Forestry Legislation.

Beyond question there is need of uniform forestry legislation in both state and nation. There is, perhaps, less likelihood of unwise legislation being enacted at Washington than in the various state legislatures, for all proposals to Congress are studied and carefully followed by organized foresters and conservationists, while almost any kind of a bill that looks plausible to the lay mind meets little opposition or even discussion by the state law-makers. The subject is crudely understood, at best, by the average citizen or legislator and he experiences a sense of relief when each particular forestry bill is disposed of. Step by step the forestry movement is gaining ground, and as the public mind advances toward a broader knowledge of its possibilities, and its great value to future as well as to present generations, it will be less difficult to secure intelligent action and support from executive and legislative branches of the government and from the public at large. Each state can and should have a forest policy, devised by experts to meet the requirements of each particular state. With broad and intelligent treatment of the subject in each state a basis would be formed which would aid each state in perfecting its own system, and in this way we would gradually reach the ideal. Several states already have fair laws, and in one state a strong committee is at work making a careful study of the laws in other states as well as the requirements in the home state with a view to developing a forest policy that shall be economically and scientifically practical.—*The Lumberman's Review.*

A Correction.

In our June number, in the article on "Insects Injurious to Forest Trees," the legend of the cut at the top of page 339 should have read "Inside of bark worked by western pine beetle," instead of "southern pine beetle" as printed.

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